

EXHIBIT PACKET

REPORTS

Executive Summary Disclosure to the
United States Congress

July 13, 2026

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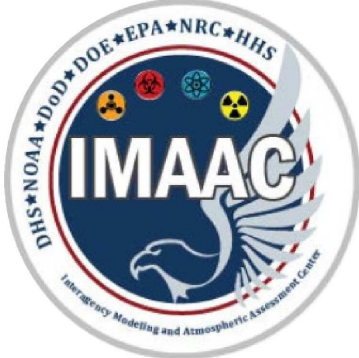
EXHIBIT 1

Feb. 4 Initial Product RFI 23-0081U IMAAC

CUI

Date: 04FEB2023 0630Z

Version: Initial Product



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, Ohio

(RFI 23-0081U)

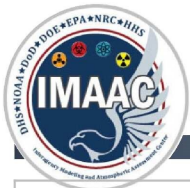
Warning - This document contains technical data whose export is restricted by the Arms Export Control Act (Section 2751 of Title 22, United States Code) or the Export Control Reform Act of 2018 (Chapter 58 Sections 4801-4852 of Title 50, United States Code). Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25 and DoD Instruction 2040.02.

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Controlled by: Defense Threat Reduction Agency
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CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

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Technical Reachback Division
(703) 767-3445, DSN 427-



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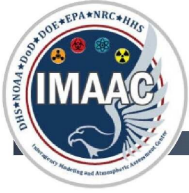
RFI 22-0081U

Request Summary

Requestor	Tricia Edwards, EPA Emergency Response Branch
Contact information	734-740-9016 Edwards.tricia@epa.gov
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	• Combustion products of 5 railcars on fire, filled with vinyl chloride: • 36,706 kg Hydrogen chloride (HCl) • 49,779 kg Phosgene (CCl₂O)
Location	East Palestine, OH 40.8356359 °N / 80.5357898 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	04FEB2023 2330 03FEB2023 Local (0430Z)
Executive Summary	• For phosgene, 17,972 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 1,901 people may be exposed to hazard levels that could possibly result in death. • For hydrogen chloride, 312 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 185 people may be exposed to hazard levels that could possibly result in death. • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

CUI

2



Assumptions

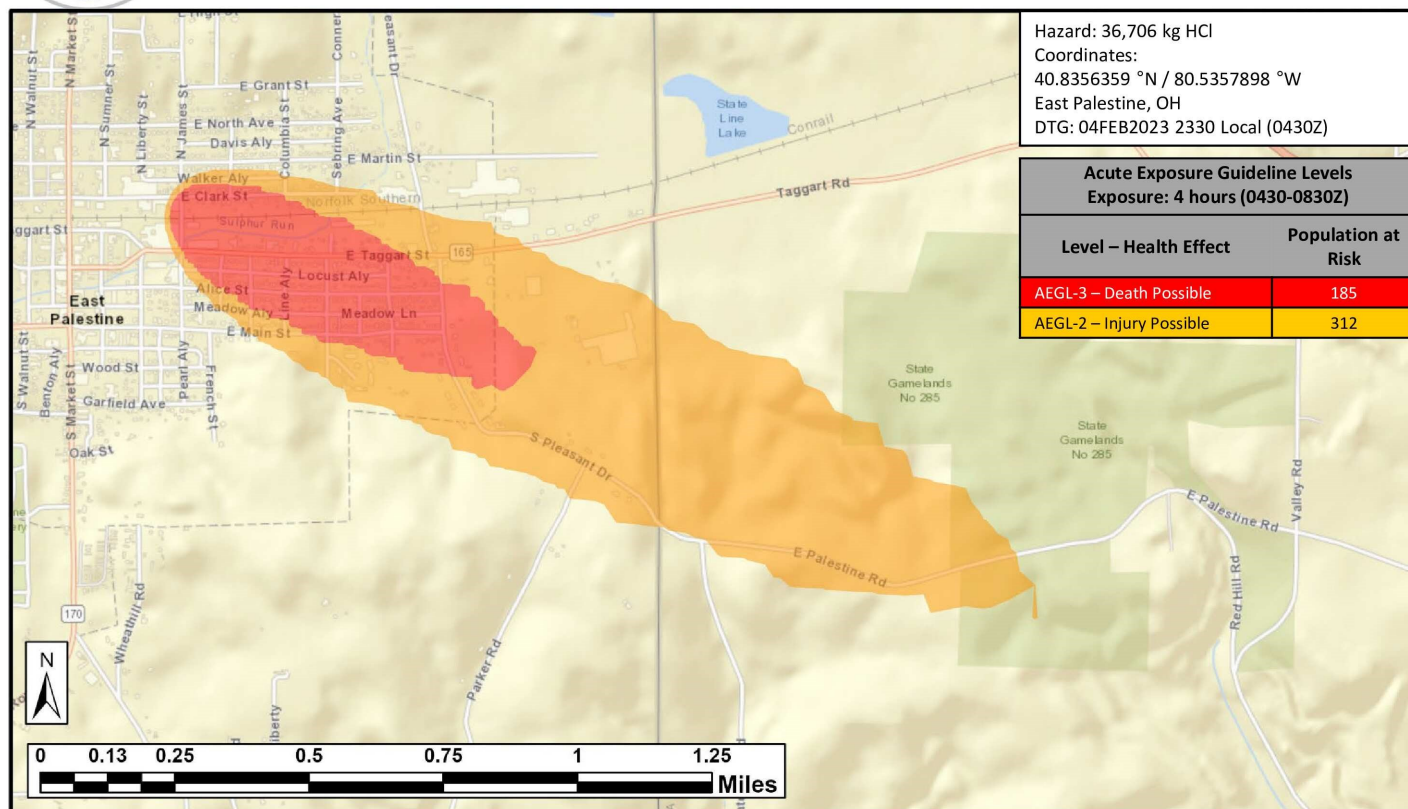
- Assumed 5 railcars, each containing 12,671 kg of vinyl chloride.
- Worst case situations where all of the vinyl chloride is consumed in the fire and converts to either hydrogen chloride or all to phosgene are modeled.



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RFI 22-0081U

Hydrogen Chloride – 0330 Local



CUI

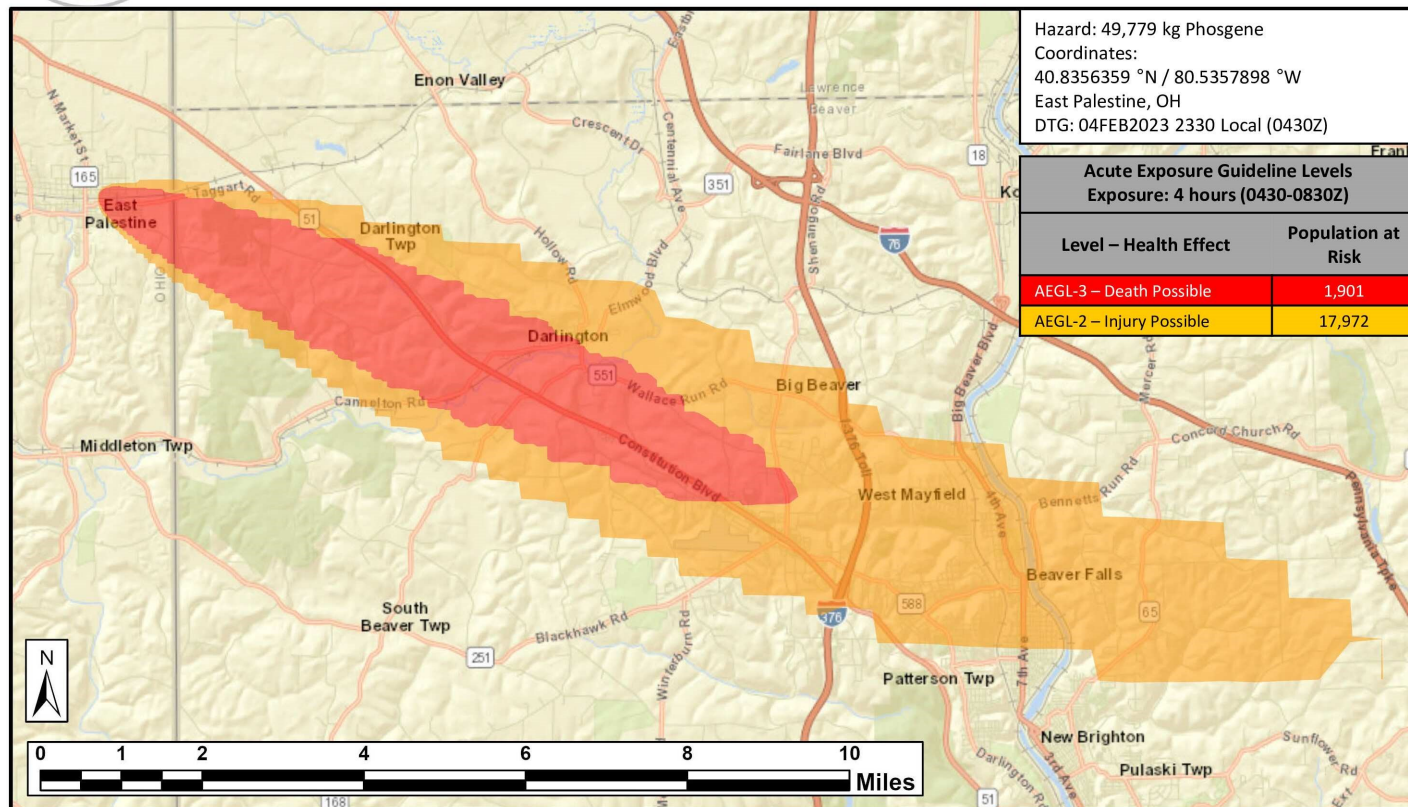
4



CUI

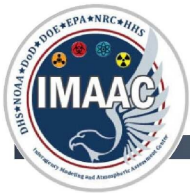
RFI 22-0081U

Phosgene – 0330 Local



CUI

5



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

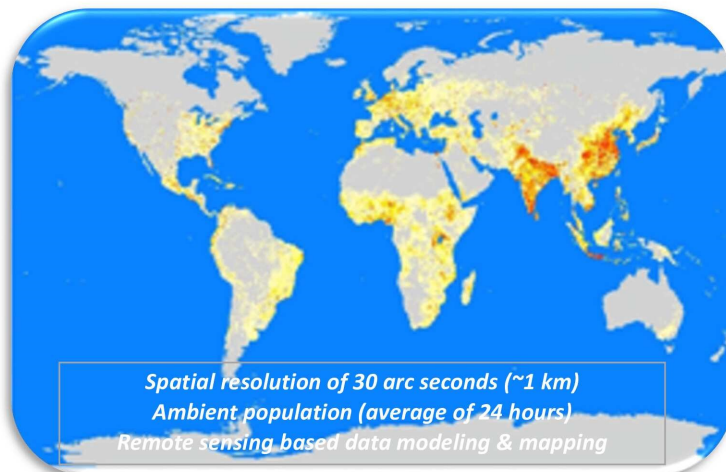
AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2020 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

EXHIBIT 2

Feb. 4 Revision A RFI 23-0081aU IMAAC

CUI

Date: 04FEB2023 1415Z

Version: Revision A

Changes: Updated weather and hazards



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH

(RFI 23-0081aU)

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RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-



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RFI 22-0081aU

Request Summary

Requestor	Tricia Edwards, EPA Region 5, Emergency Response Branch
Contact information	734-740-9016 Edwards.tricia@epa.gov
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O)
Location	East Palestine, OH 40.83564 °N / 80.53579 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	0800 04FEB2023 Local (1300Z)
Executive Summary	• For phosgene, 840 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 517 people may be exposed to hazard levels that could possibly result in death. • For hydrogen chloride, 175 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 53 people may be exposed to hazard levels that could possibly result in death. • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

CUI

2



Assumptions / Comments

- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor (178,000 lb ~ 81,000 kg).
- The fire is reported as less aggressively burning; updated model lowers vinyl chloride to 10% of the total reported.
- Worst case situations are modeled, in which all of the vinyl chloride is consumed in the fire and converts completely to either hydrogen chloride or to phosgene.
- Hydrogen chloride is a combustion byproduct of vinyl chloride.
- Reports exist of vinyl chloride decompose to phosgene.
Amounts modeled likely over-state the expected hazard and be considered as an absolute worst case hazard (upper bound)



RFI 22-0081aU

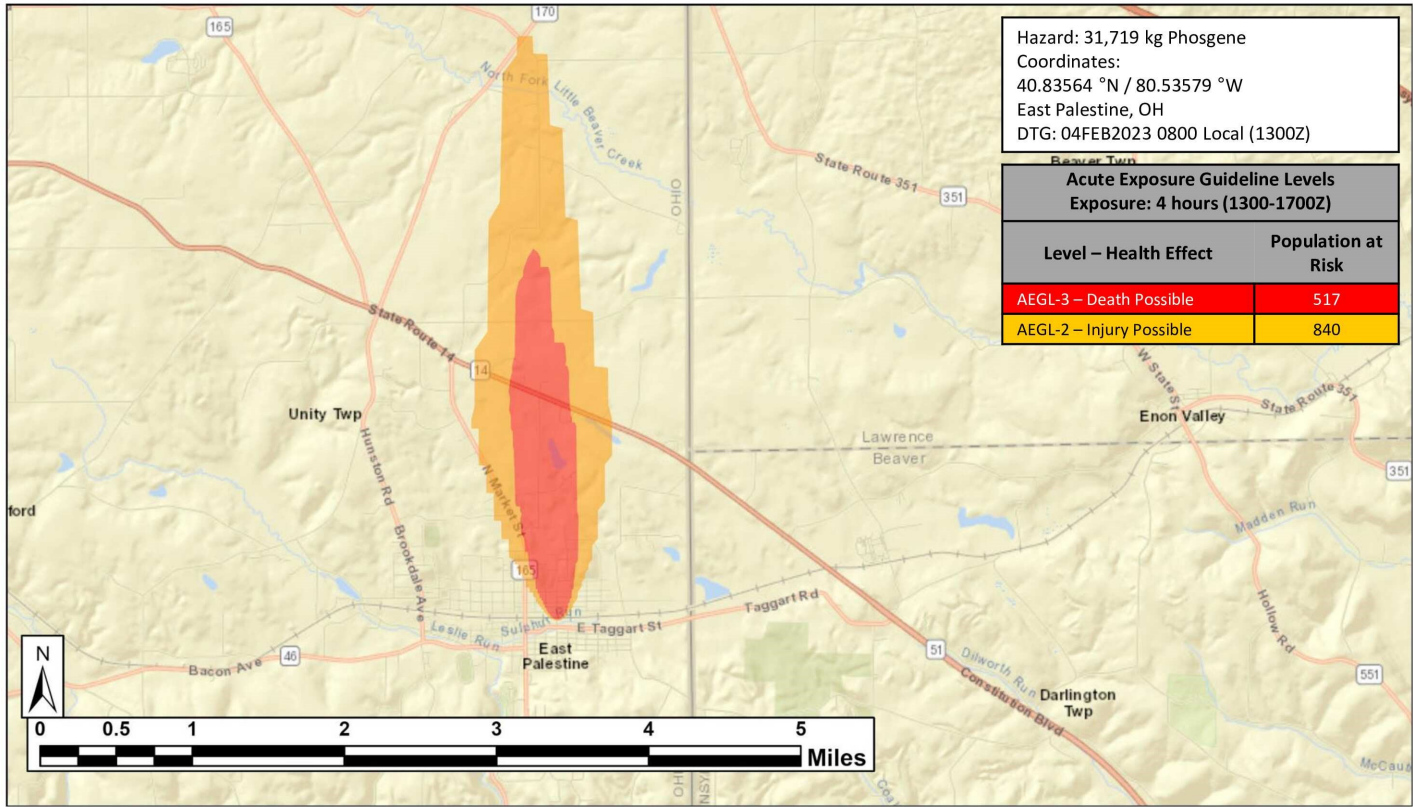




CUI

RFI 22-0081aU

Phosgene – 0800 Local



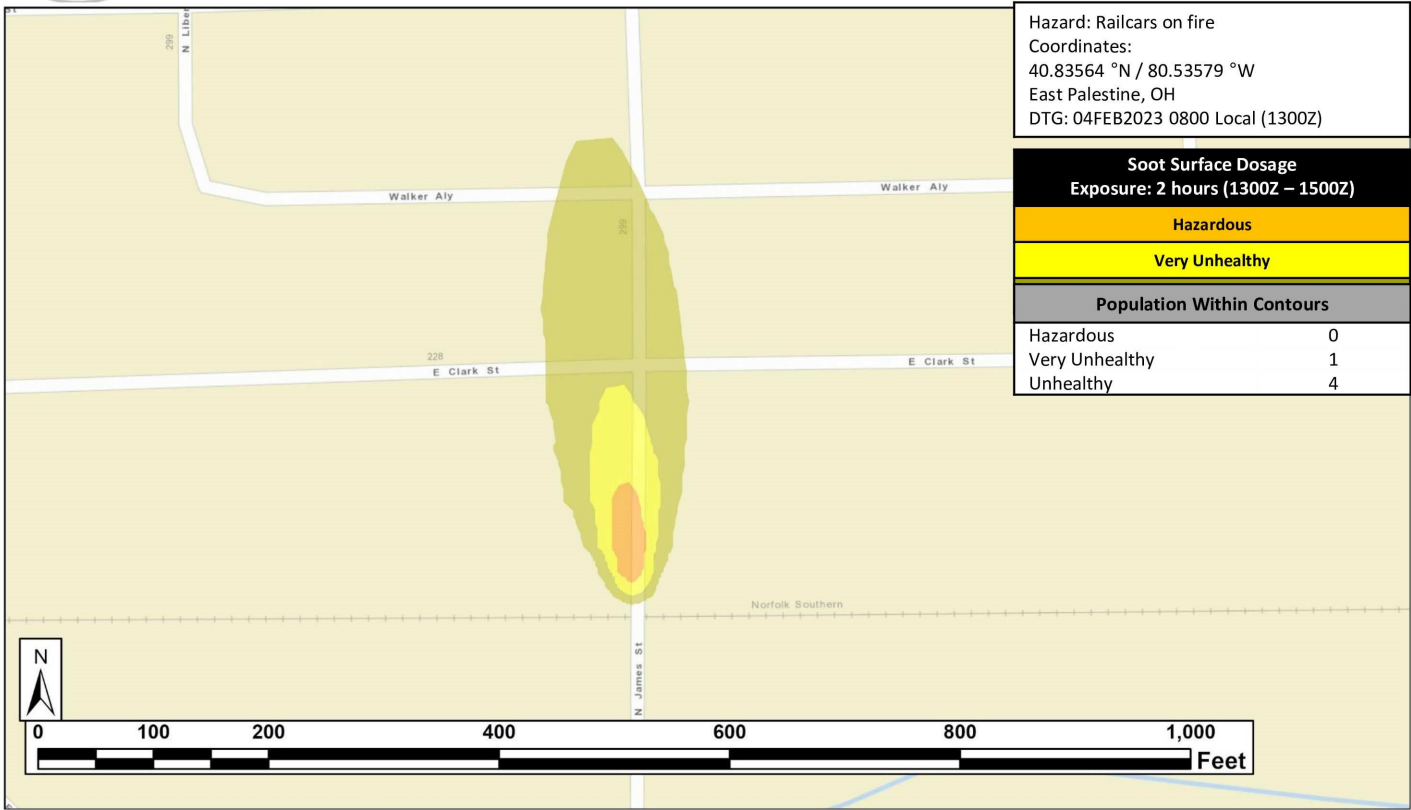
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RFI 22-0081aU

Soot– Surface Dosage- 0800 Local



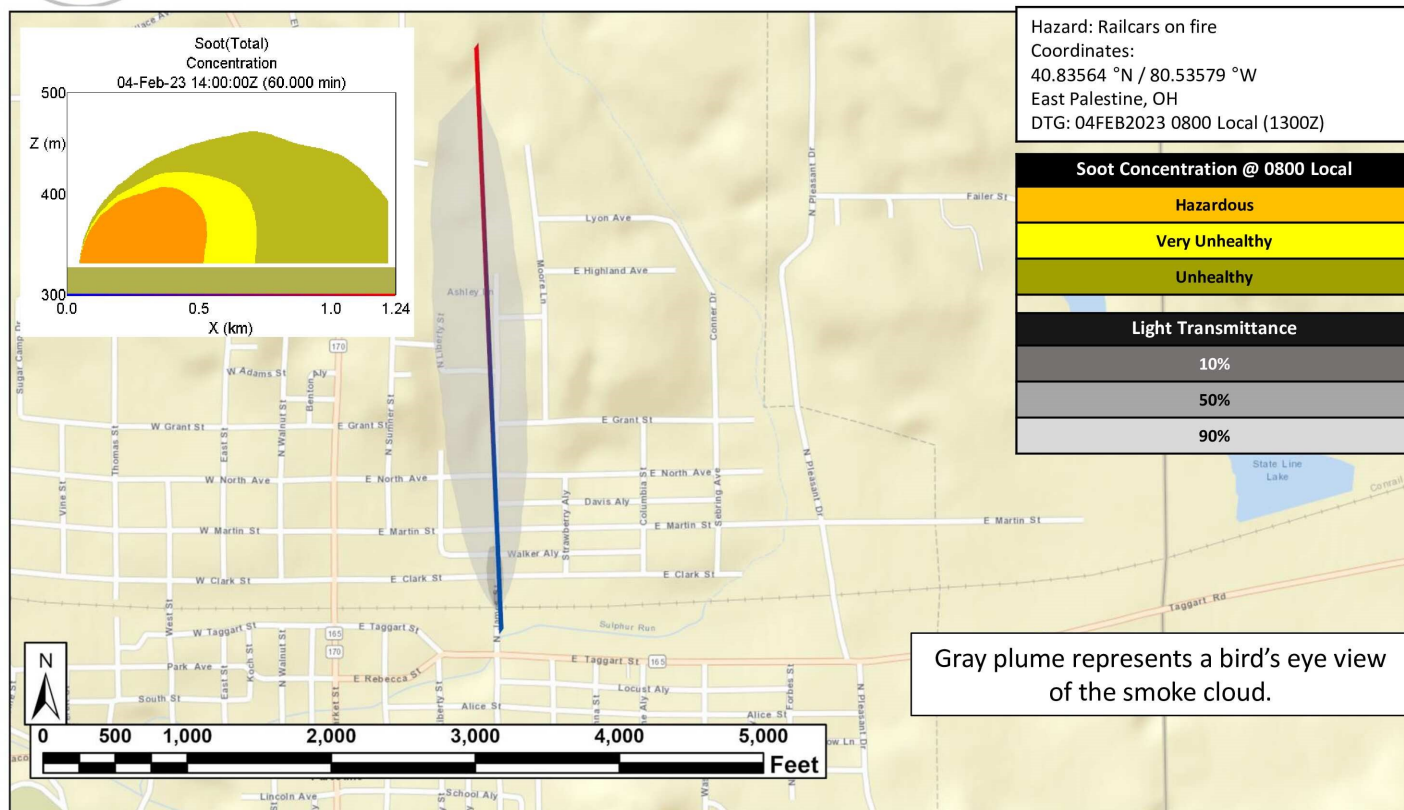
CUI



CUI

RFI 22-0081aU

Soot –Vertical Profile- 0800 Local



CUI

7



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

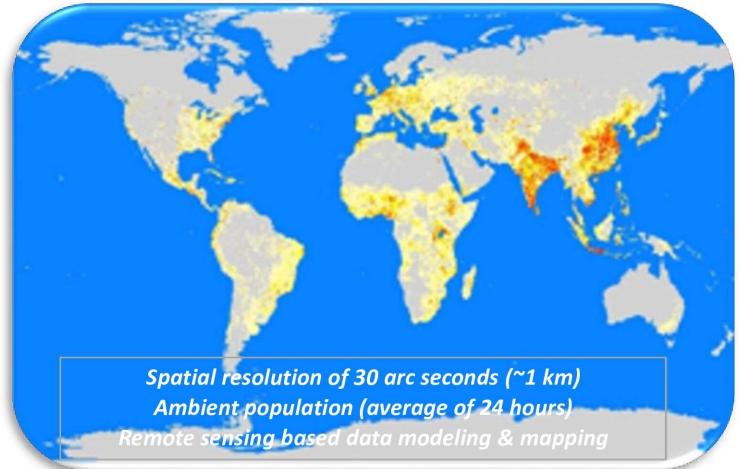
AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

EXHIBIT 3

Feb. 4 Revision B RFI 23-0081bU IMAAC

~~CUI~~

Date: 04FEB2023 2300Z

Version: Revision B

Changes: Updated weather



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH (RFI 23-0081bU)

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RFI 22-0081bU

Request Summary

Requestor	(b) (6) EPA Region 5, Emergency Response Branch
Contact information	(b) (6)
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O)
Location	East Palestine, OH 40.83564 °N / 80.53579 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 1800 04FEB2023 Local (2300Z) 2. 0000 05FEB2023 Local (0500Z)
Executive Summary	• For phosgene at 0000 Local, 1153 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 348 people may be exposed to hazard levels that could possibly result in death. (1800 local model shows slightly fewer at risk. • For HCl at 0000 Local, 118 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 57 people may be exposed to hazard levels that could possibly result in death. (1800 local model shows slightly fewer at risk.) • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

~~CUI~~

2



~~CUI~~

RFI 22-0081bU

Assumptions / Comments

- No additional information was provided on the fire that continues to burn and no changes were made on the modeled amounts and fire intensity. As a result, populations at risk in this update may be overstated.
- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor (178,000 lb ~ 81,000 kg).

(b)(3)10USC130

~~CUI~~

3

1800 Local (2300Z)

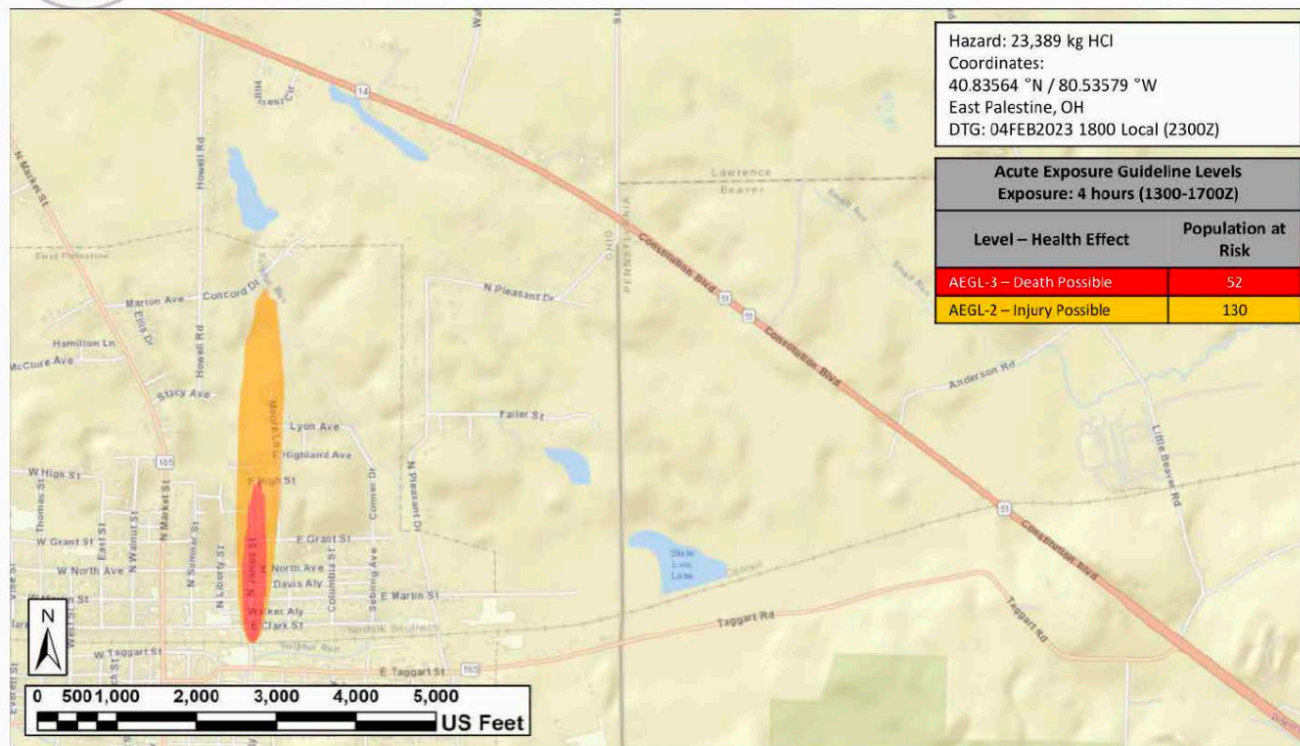
04FEB2023



CUI

RFI 22-0081bU

Hydrogen Chloride – 1800 Local



CUI

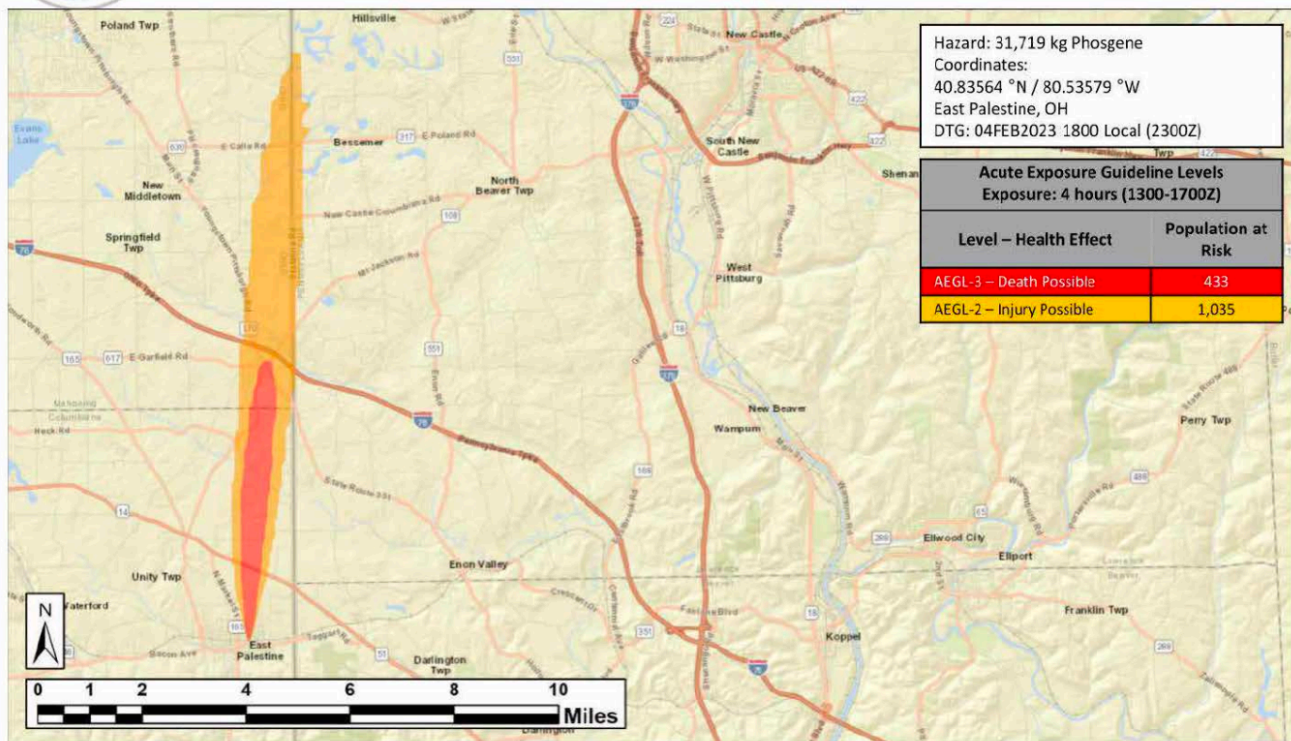
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RFI 22-0081bU

Phosgene – 1800 Local



~~CUI~~

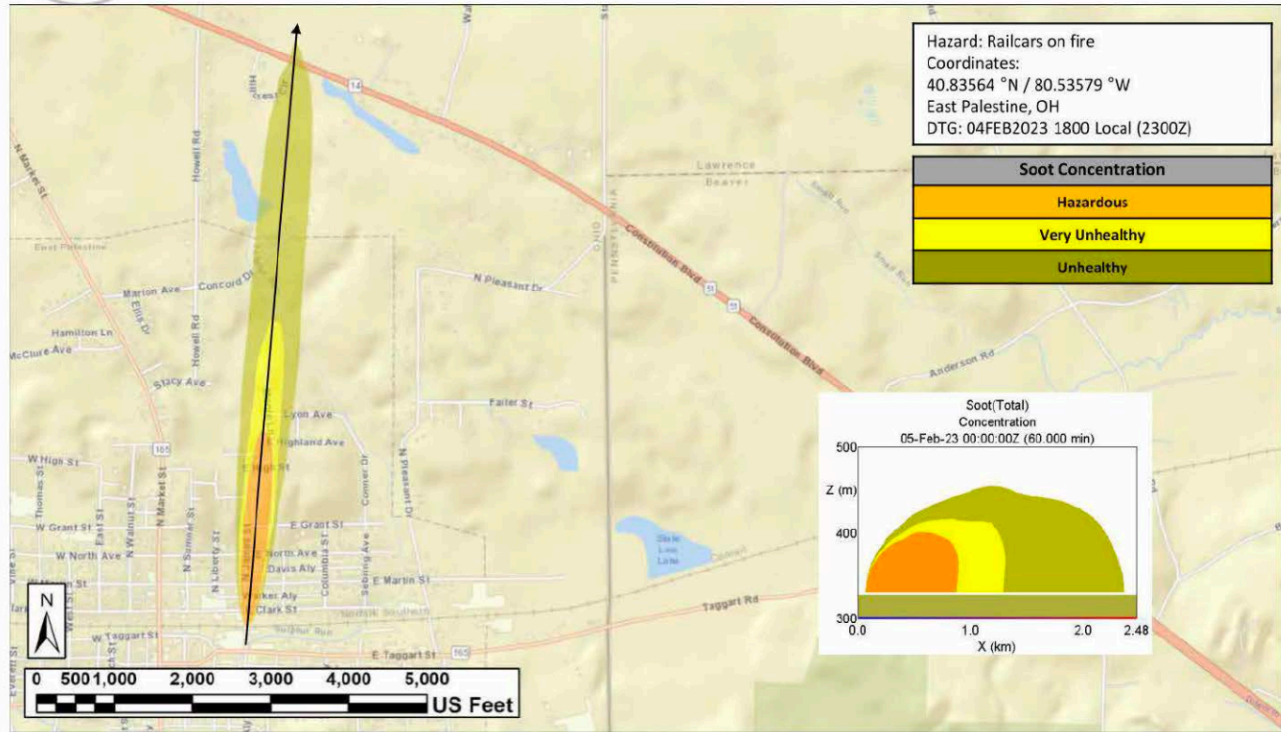
6



CUI

RFI 22-0081bU

Soot – 1800 Local



CUI

8

0000 Local (0500Z)

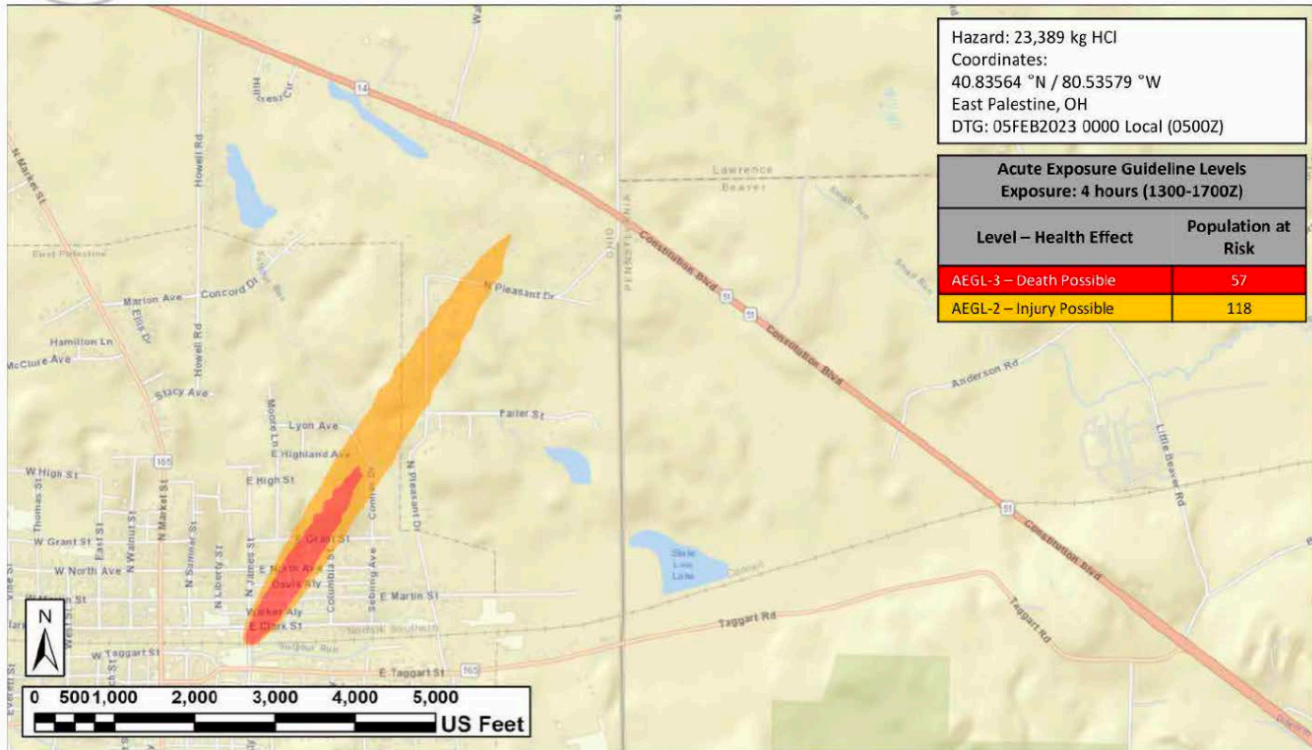
05FEB2023



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RFI 22-0081bU

Hydrogen Chloride – 0000 Local



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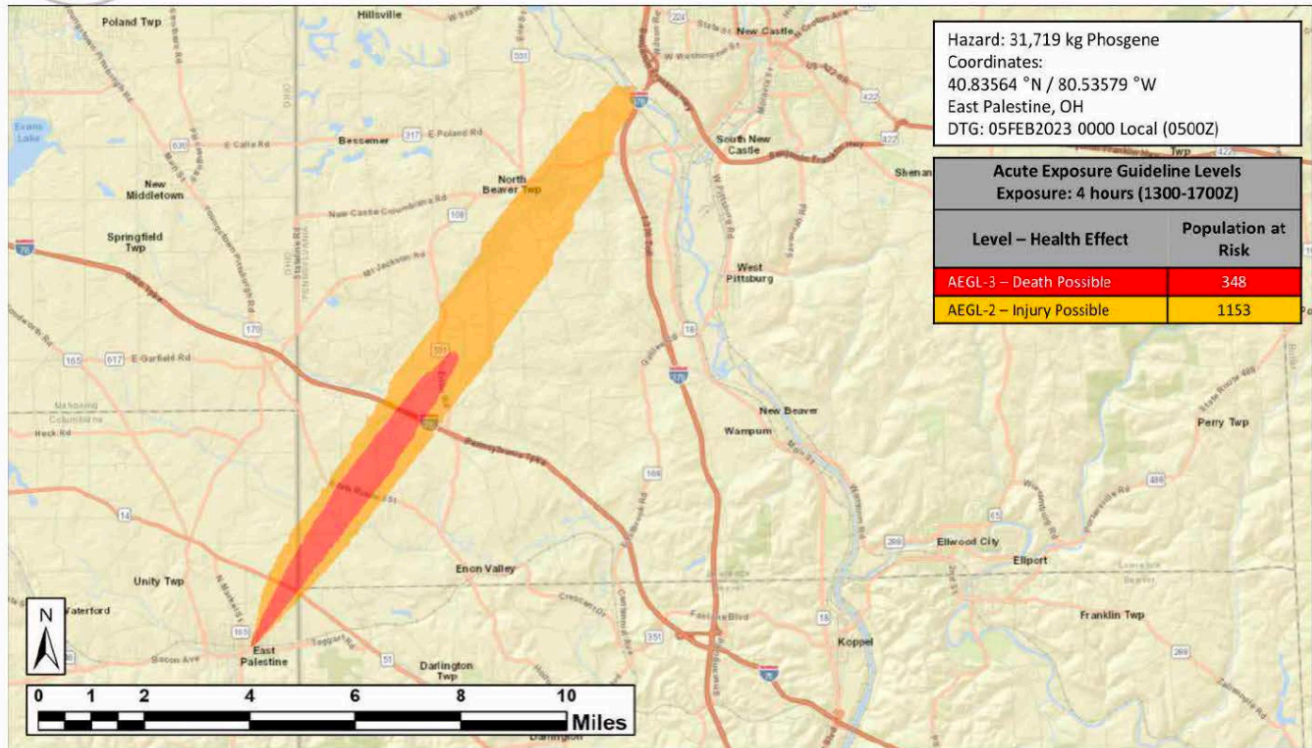
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RFI 22-0081bU

Phosgene – 0000 Local



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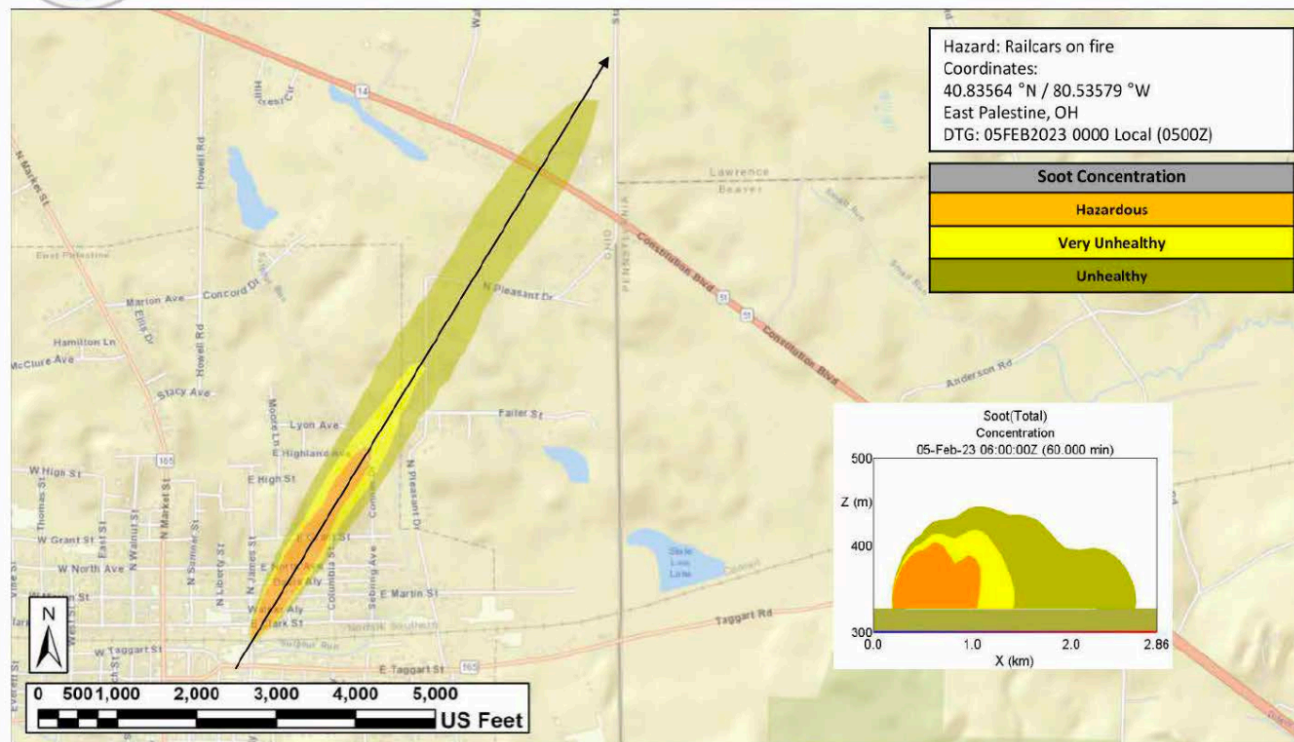
11



CUI

RFI 22-0081bU

Soot – 0000 Local



CUI

13



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
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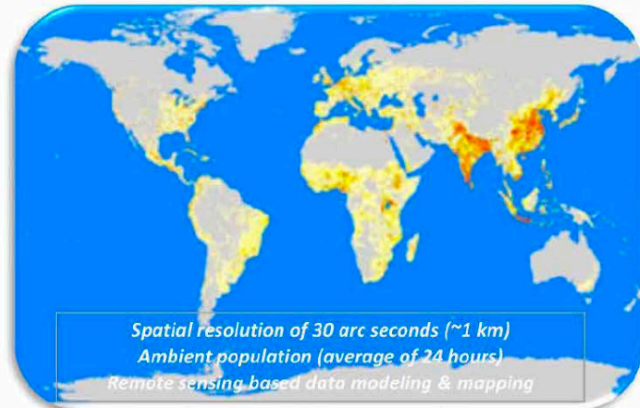


~~CUI~~

RFI 22-0081bU

Population Data

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- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
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- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



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~~CUI~~

15

EXHIBIT 4

Feb. 5 Revision C RFI 23-0081cU IMAAC

CUI

Date: 05FEB2023 0600Z

Version: Revision C

Changes: Updated weather



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH (RFI 23-0081cU)

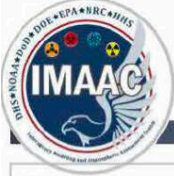
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CUI



~~CUI~~

RFI 22-0081cU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	(b) (6) [REDACTED]
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O)
Location	East Palestine, OH 40.83564 °N / 80.53579 °W
Weather	High Resolution Numerical Weather Prediction: 3 km NAM from NCEP (CONUS)
Incident Date & Time	1. 0600 05FEB2023 Local (1100Z) 2. 1200 05FEB2023 Local (1700Z)
Executive Summary	• For phosgene at 0600 Local, 797 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 274 people may be exposed to hazard levels that could possibly result in death. (1200 local model shows slightly fewer at risk. • For HCl at 1200 Local, 101 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 29 people may be exposed to hazard levels that could possibly result in death. (0600 local model shows slightly fewer at risk.) • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

~~CUI~~

2



Assumptions / Comments

- No additional information was provided on the fire that continues to burn and no changes were made on the modeled amounts and fire intensity. As a result, populations at risk in this update may be overstated.
- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor (178,000 lb ~ 81,000 kg).

(b)(3)10USC130

- Worst case situations are modeled, in which all of the vinyl chloride is consumed in the fire and converts completely to either hydrogen chloride or to phosgene.
- Hydrogen chloride is a combustion byproduct of vinyl chloride.
- Reports exist of vinyl chloride decompose to phosgene. Amounts modeled likely over-state the expected hazard and be considered as an absolute worst case hazard (upper bound)

0600 Local (1700Z)

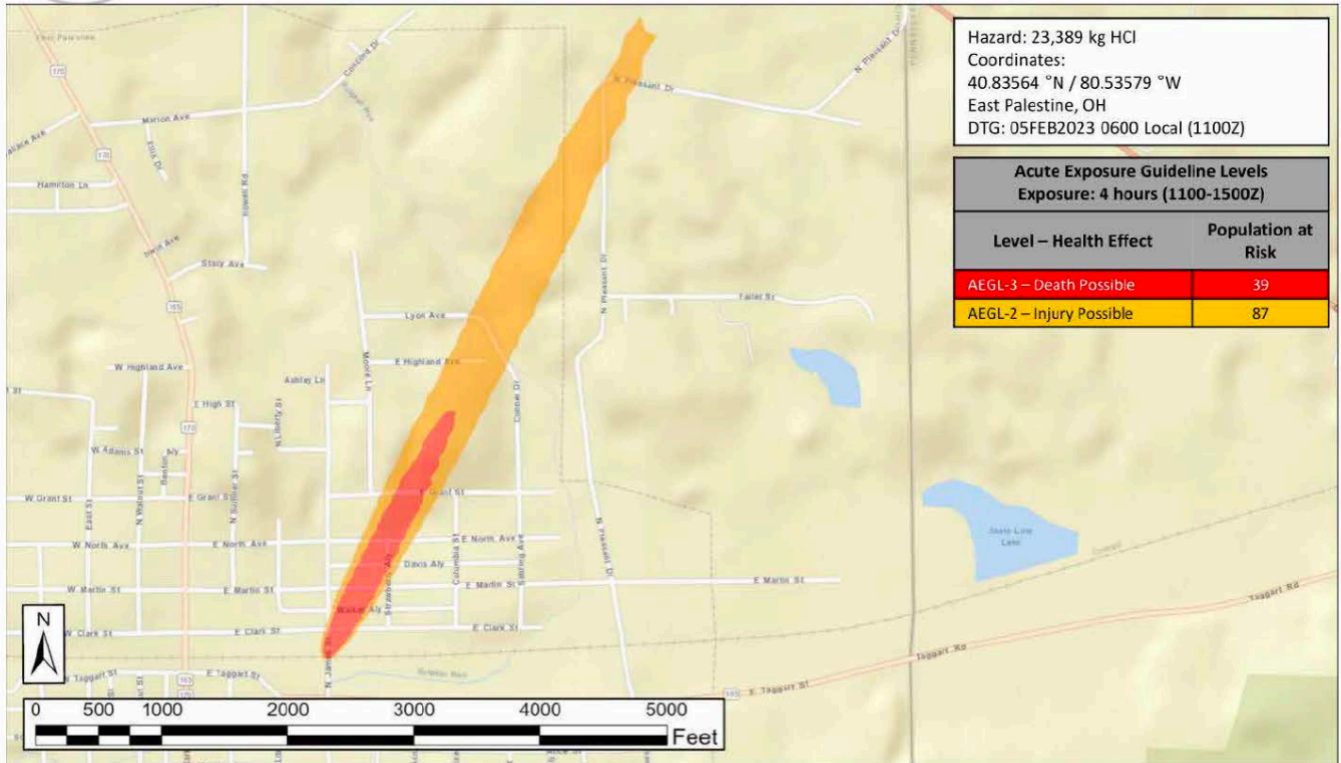
05FEB2023



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RFI 22-0081cU

Hydrogen Chloride – 0600 Local



CUI

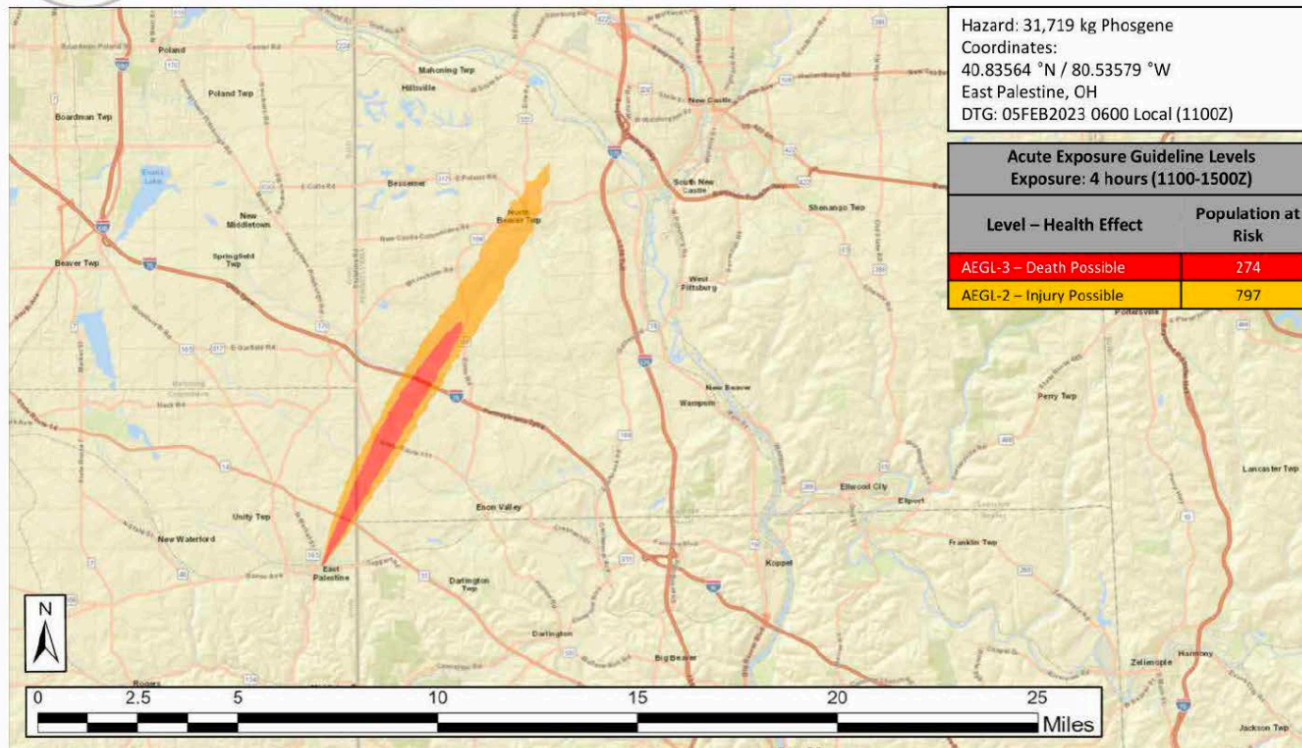
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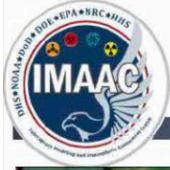
RFI 22-0081cU

Phosgene – 0600 Local



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6



CUI

RFI 22-0081cU

Soot- 0600 Local



CUI

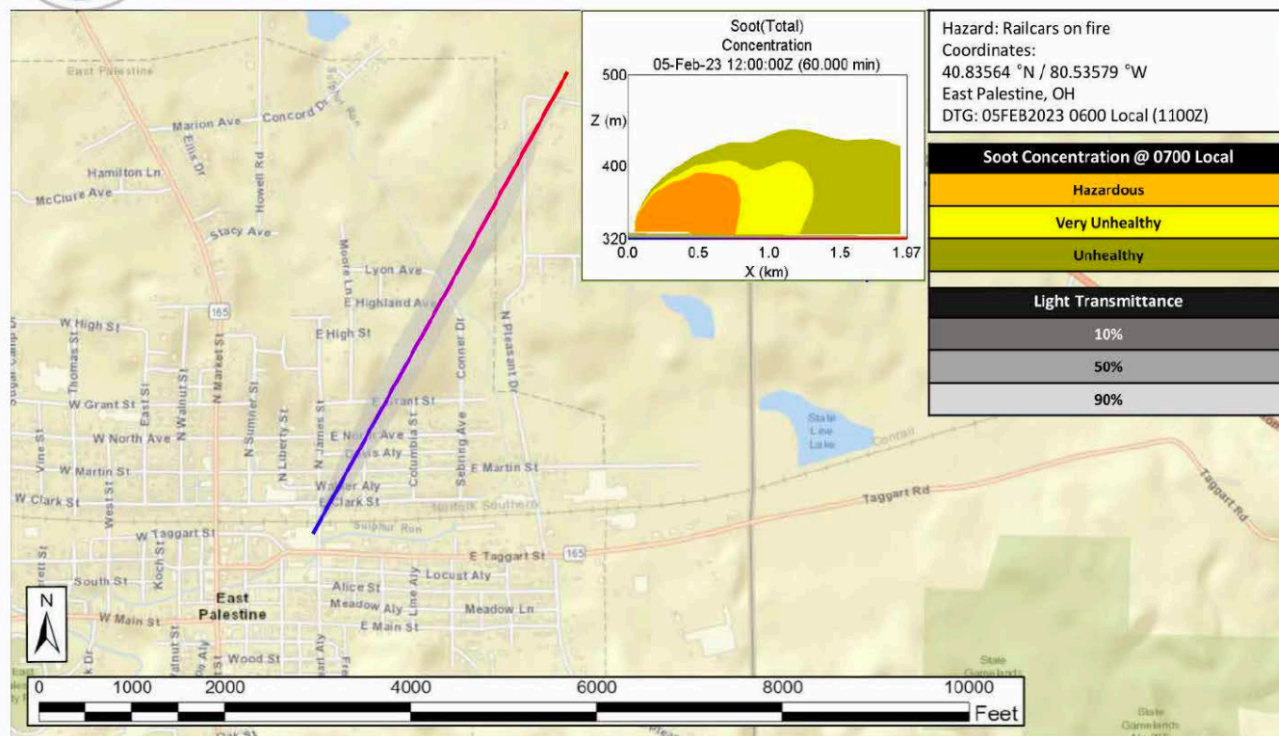
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CUI

RFI 22-0081cU

Soot – 0600 Local



CUI

8

1200 Local (1700Z)

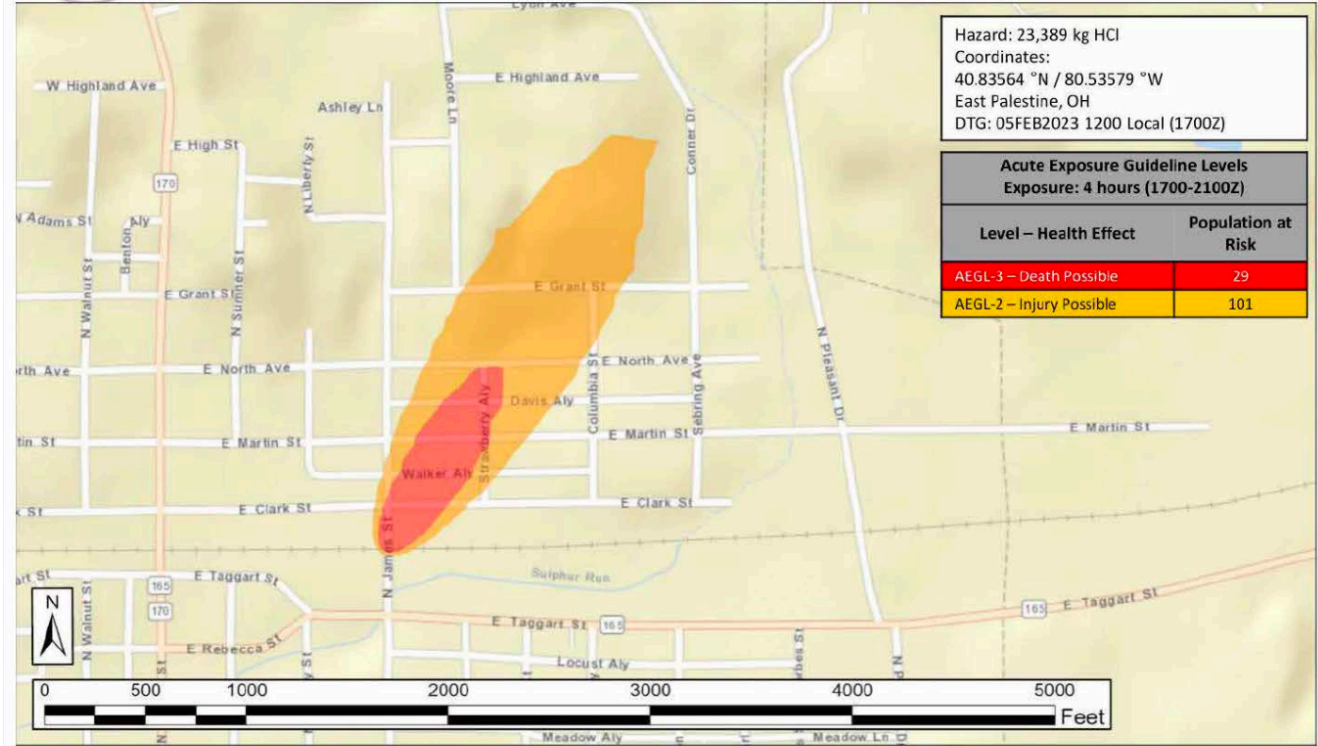
05FEB2023



CUI

RFI 22-0081cU

Hydrogen Chloride – 1200 Local



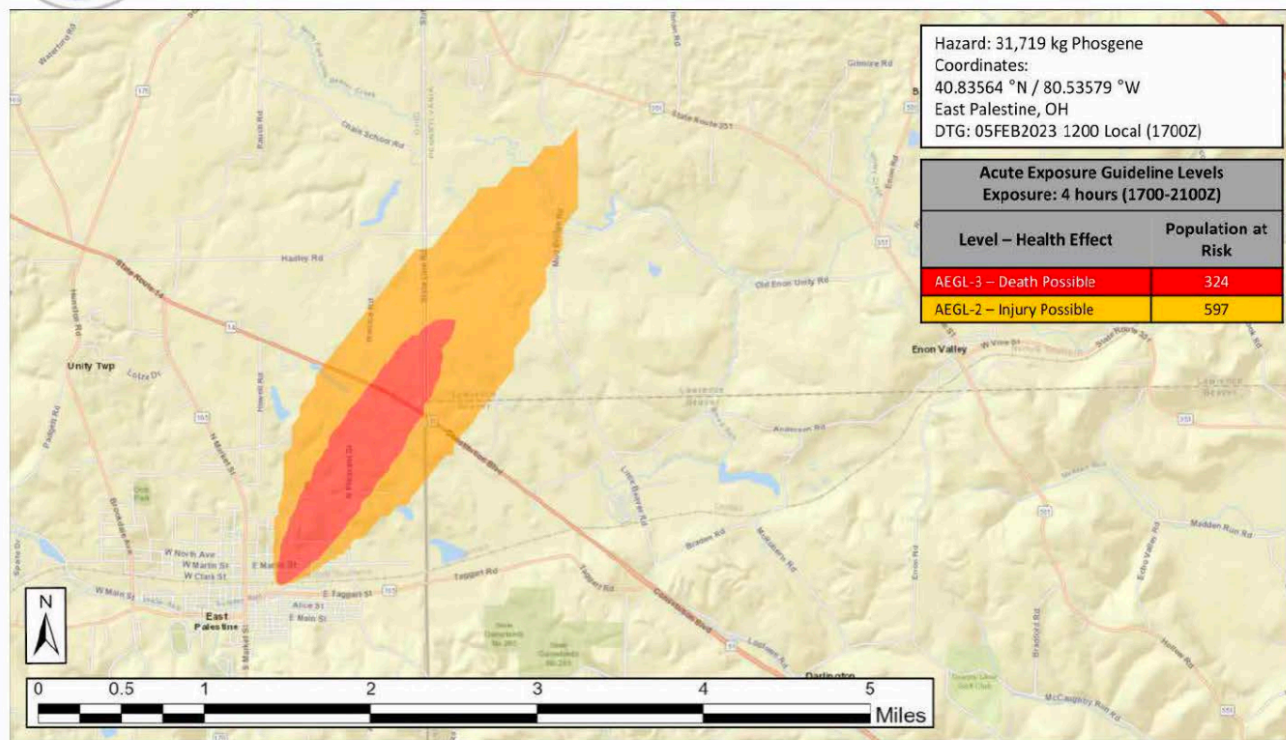
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RFI 22-0081cU

Phosgene – 1200 Local



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11



CUI

RFI 22-0081cU

Soot- 1200 Local



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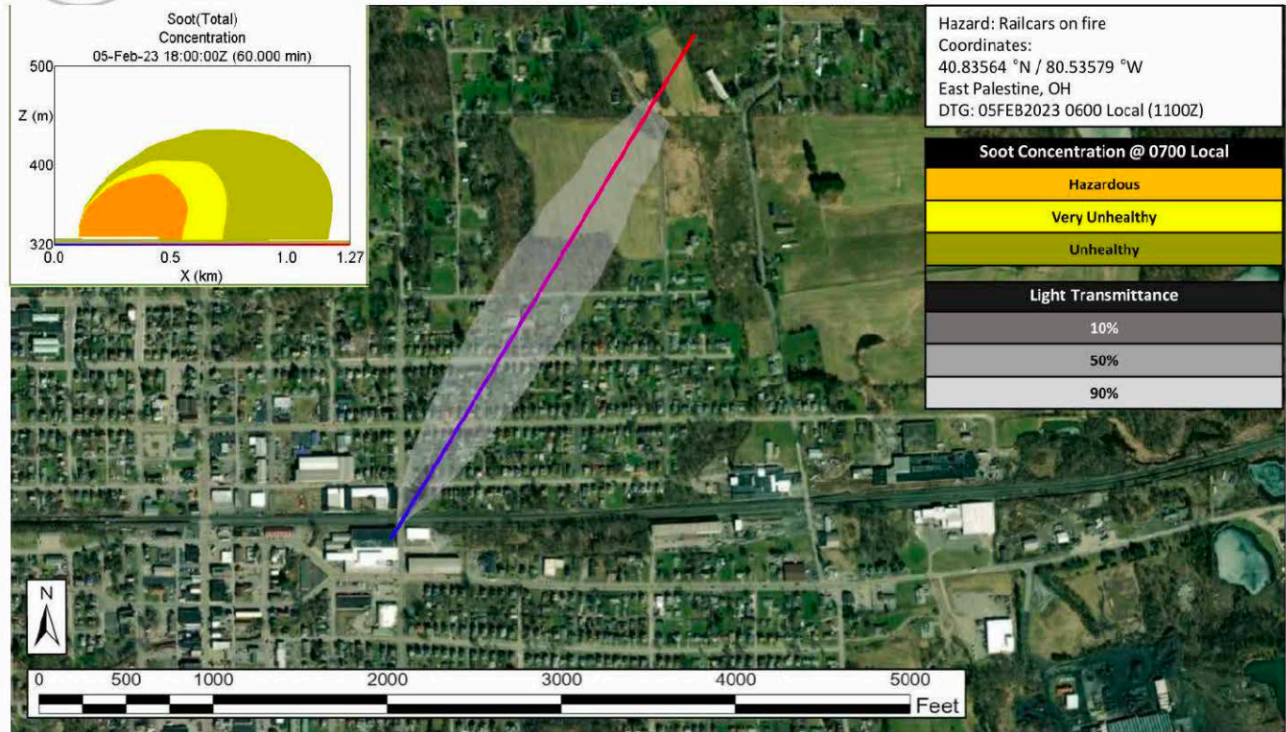
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RFI 22-0081cU

Soot – 0600 Local



~~CUI~~

13



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.

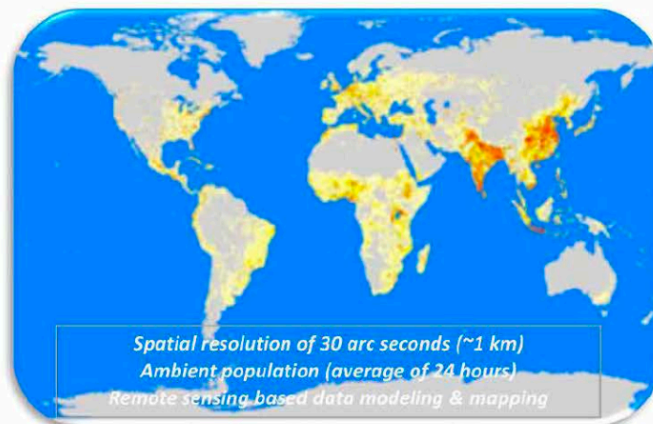


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RFI 22-0081cU

Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

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EXHIBIT 5

Feb. 5 Revision D RFI 23-0081dU IMAAC

CUI

Date: 05FEB2023 2300Z

Version: Revision D

Changes: Updated location & weather



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH (RFI 23-0081dU)

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CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

CUI

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-



CUI

RFI 22-0081dU

Request Summary

Requestor	Tricia Edwards, EPA Region 5, Emergency Response Branch
Contact information	734-740-9016 Edwards.tricia@epa.gov
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O)
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 1800 05FEB2023 Local (2300Z) 2. 0000 06FEB2023 Local (0500Z)
Executive Summary	• The new location resulted in significantly lower number people being at risk. • For phosgene at 1800 Local, 2,718 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 433 people may be exposed to hazard levels that could possibly result in death. (0500 local model shows slightly fewer at risk. • For HCl at 0000 and 1800 Local, 4 people are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 2 people may be exposed to hazard levels that could possibly result in death. • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

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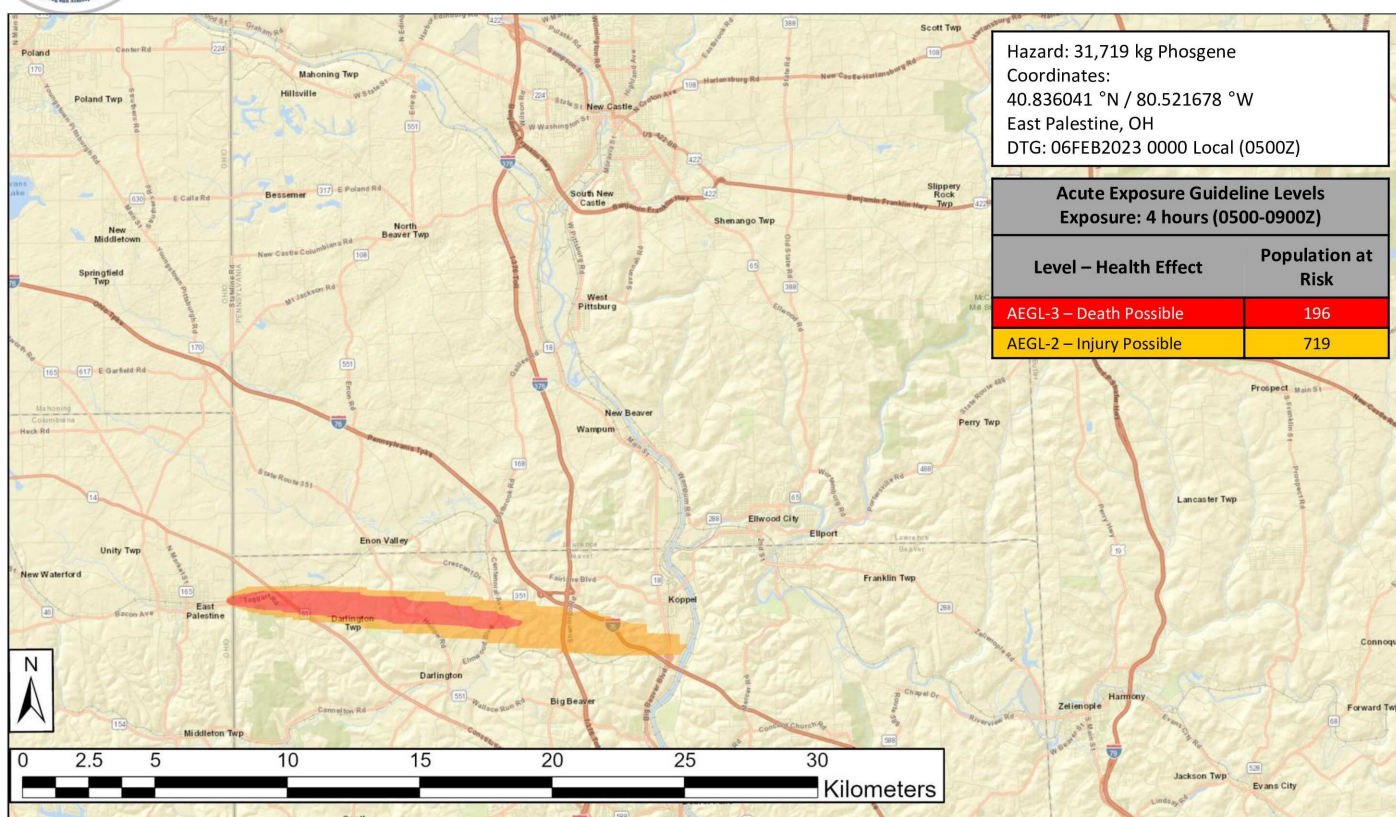
2



CUI

RFI 22-0081dU

Phosgene – 0000 Local



CUI

11



CUI

RFI 22-0081dU

Soot– Surface Dosage- 0000 Local



CUI

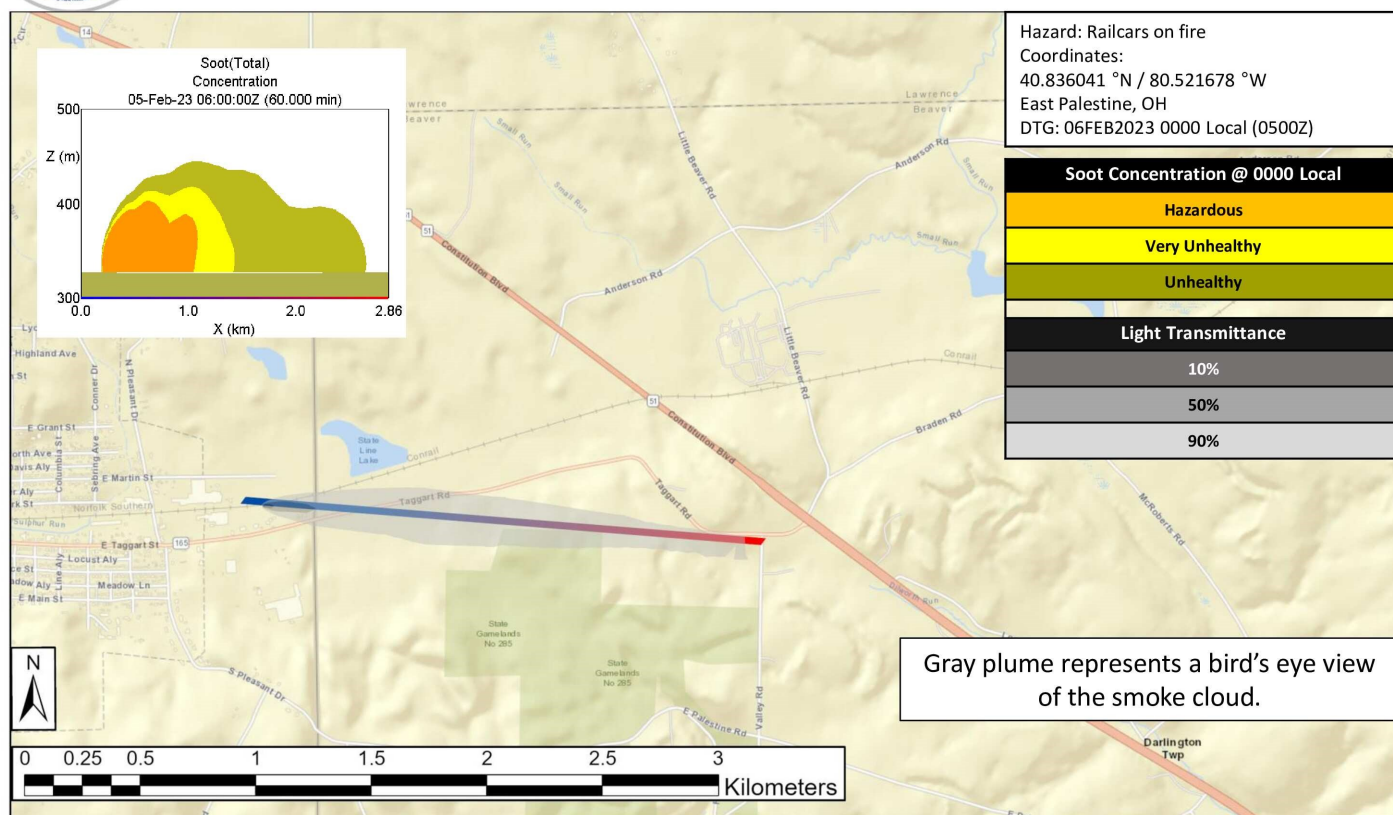
12



CUI

RFI 22-0081dU

Soot – Vertical Profile-0000 Local



CUI

13



CUI

RFI 22-0081dU

Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.

CUI

14

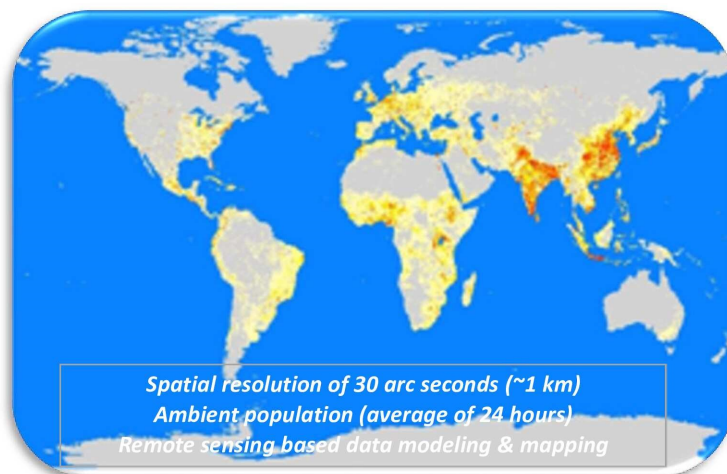


Population Data

CUI

RFI 22-0081dU

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*



- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.

*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

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15



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RFI 22-0081dU

Assumptions / Comments

- No additional information was provided on the fire that continues to burn and no changes were made on the modeled amounts and fire intensity. As a result, populations at risk in this update may be overstated.
- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor (178,000 lb ~ 81,000 kg).
- The fire is reported as less aggressively burning; updated model lowers vinyl chloride to 10% of the total initially reported.
- Worst case situations are modeled, in which all of the vinyl chloride is consumed in the fire and converts completely to either hydrogen chloride or to phosgene.
- Hydrogen chloride is a combustion byproduct of vinyl chloride.
- Reports exist of vinyl chloride decompose to phosgene. Amounts modeled likely over-state the expected hazard and be considered as an absolute worst case hazard (upper bound)

CUI

3

1800 Local (2300Z)

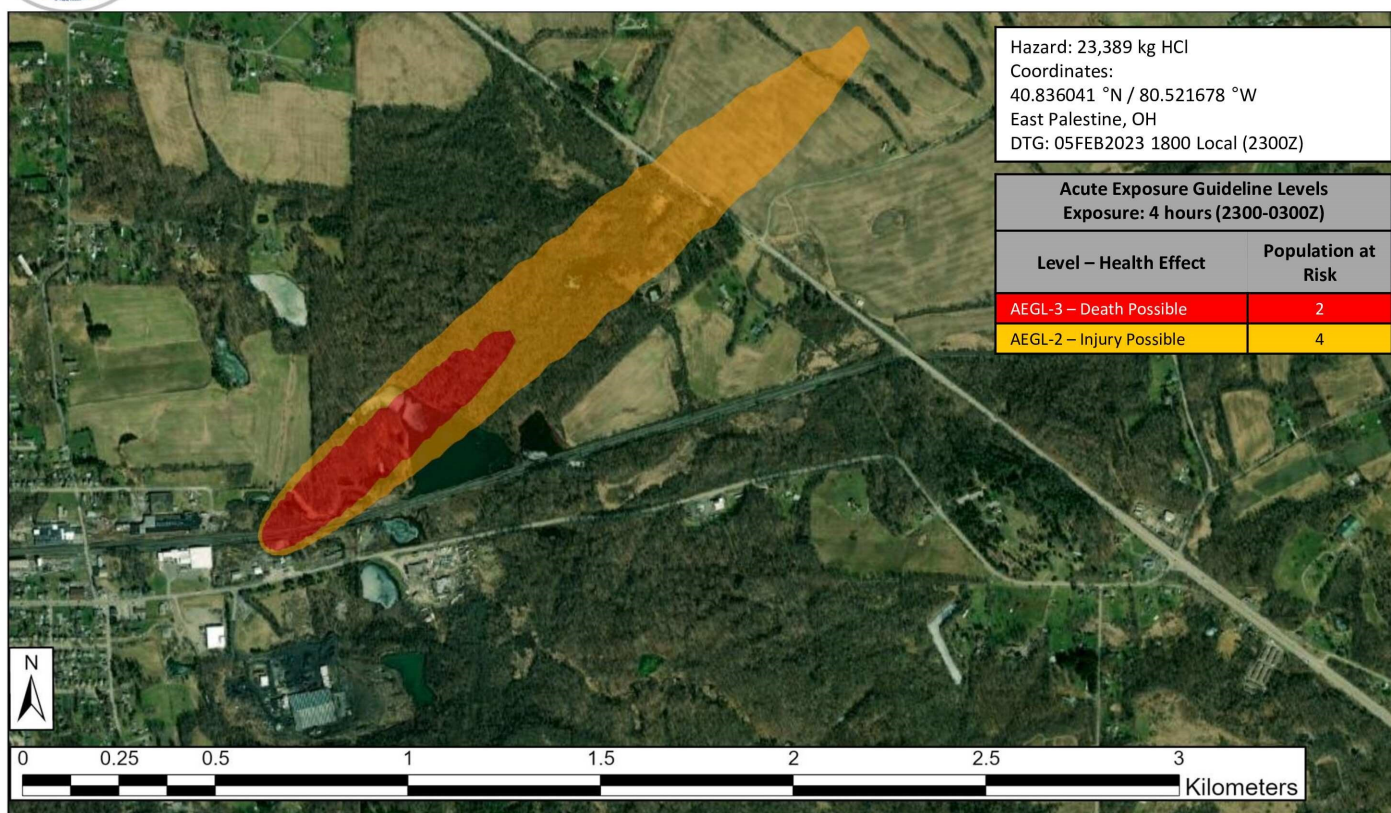
05FEB2023



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RFI 22-0081dU

Hydrogen Chloride – 1800 Local



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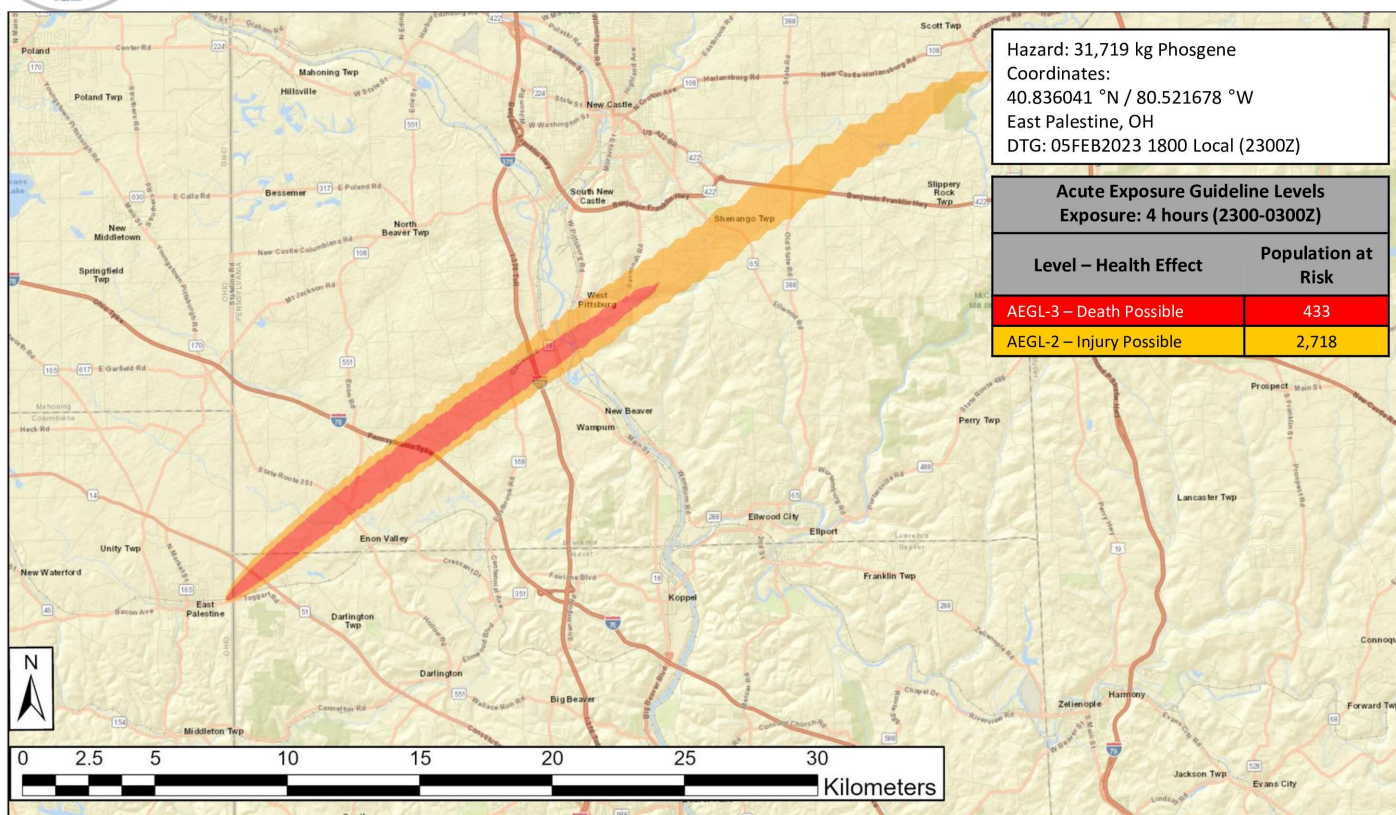
5



CUI

RFI 22-0081dU

Phosgene – 1800 Local



CUI

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CUI

RFI 22-0081dU

Soot– Surface Dosage- 1800 Local



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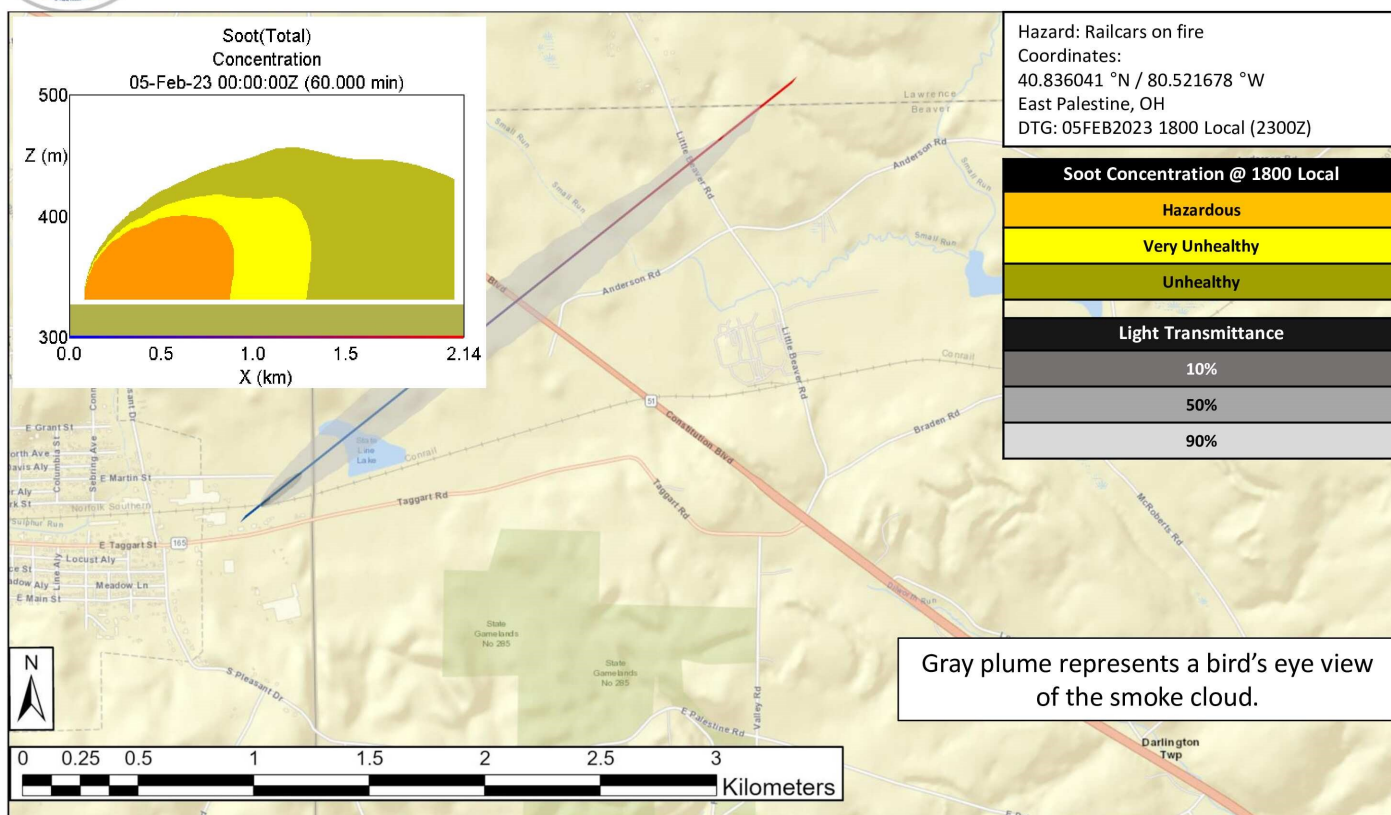
7



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RFI 22-0081dU

Soot – Vertical Profile-1800 Local



CUI

8

0000 Local (0500Z)

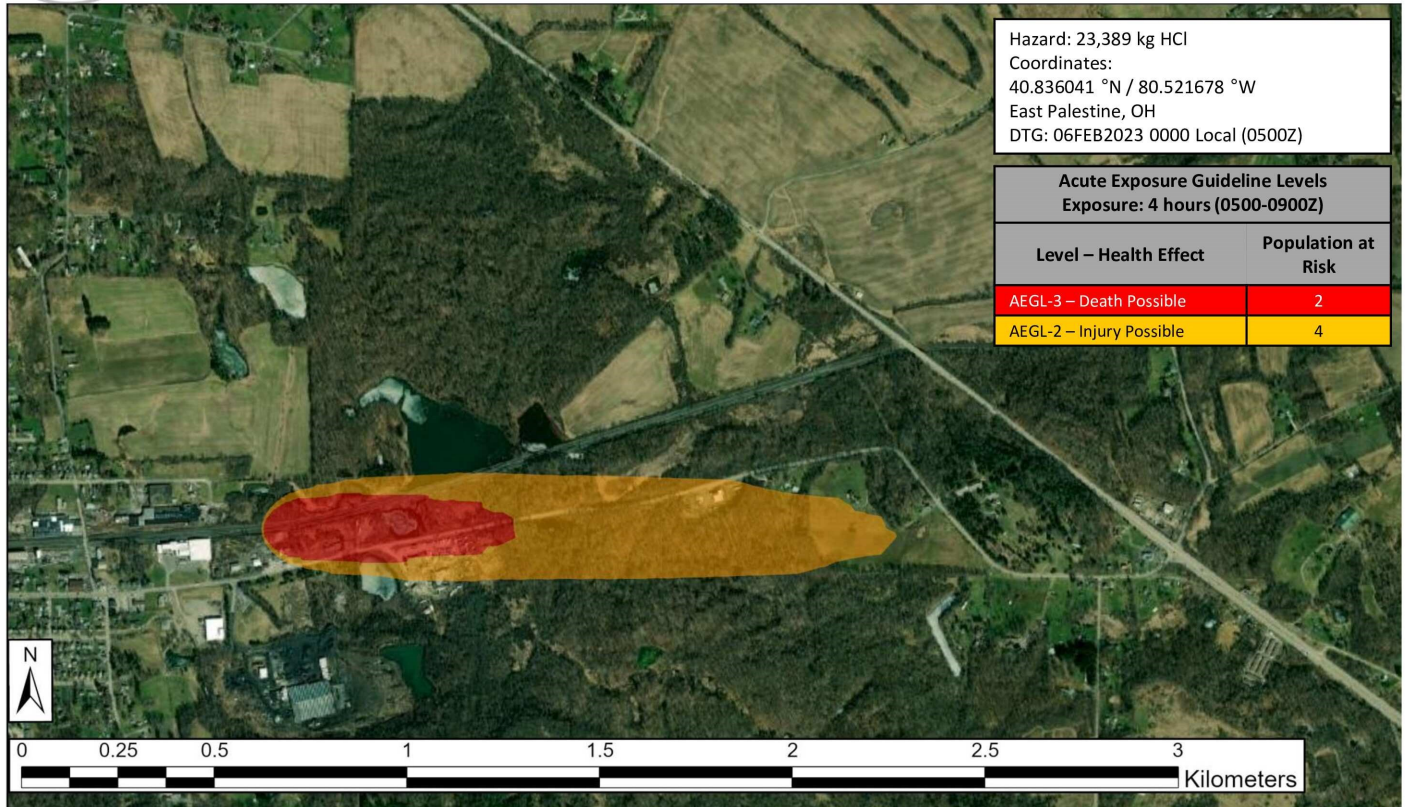
06FEB2023



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RFI 22-0081dU

Hydrogen Chloride – 0000 Local



CUI

10

EXHIBIT 6

Feb. 6, 2023, Revision E RFI 23-0081eU IMAAC

~~CUI~~

Date: 06FEB2023 0330Z

Version: Revision E

Changes: Updated Time



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH

(RFI 23-0081eU)

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CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

~~CUI~~

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-



~~CUI~~

RFI 22-0081eU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	(b) (6) [REDACTED]
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O)
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 0600 06FEB2023 Local (1100Z) 2. 1200 06FEB2023 Local (1700Z)
Executive Summary	• For phosgene at 0600 and 1200 Local, 406 and 70 people respectively are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 159 and 22 people respectively may be exposed to hazard levels that could possibly result in death. (0600 local model shows fewer at risk). • For HCl at 0600 and 1200 Local, 3 and 6 people respectively are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 2 and 1 people respectively may be exposed to hazard levels that could possibly result in death. • Note: AEGLs are conservative safety levels and assume an unsheltered general population (to include susceptible individuals).

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RFI 22-0081eU

Assumptions & Comments

- No additional information was provided on the fire that continues to burn, and no changes were made to the modeled amounts and fire intensity. As a result, populations at risk in this update may be overstated.
- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor: (178,000 lb ~ 81,000 kg).

(b)(3)10USC130

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3

0600 Local (1100Z)

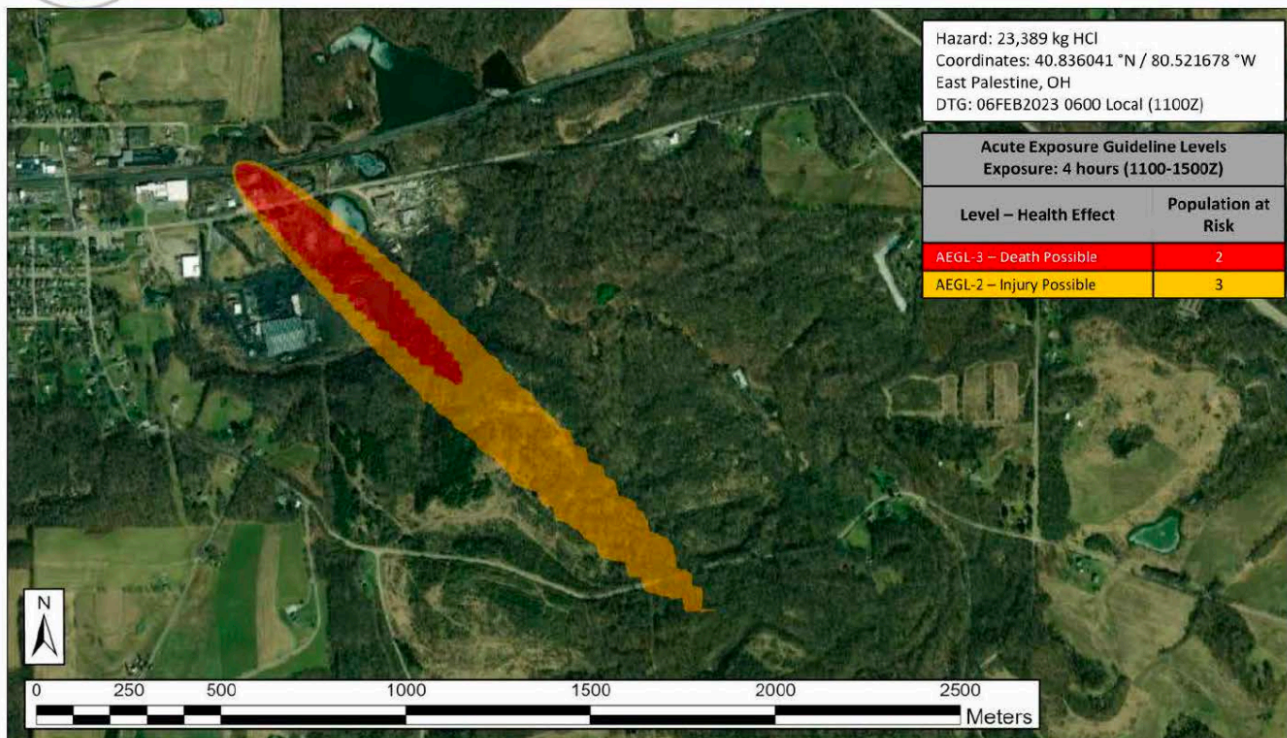
06FEB2023



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RFI 22-0081eU

Hydrogen Chloride – 0600 Local



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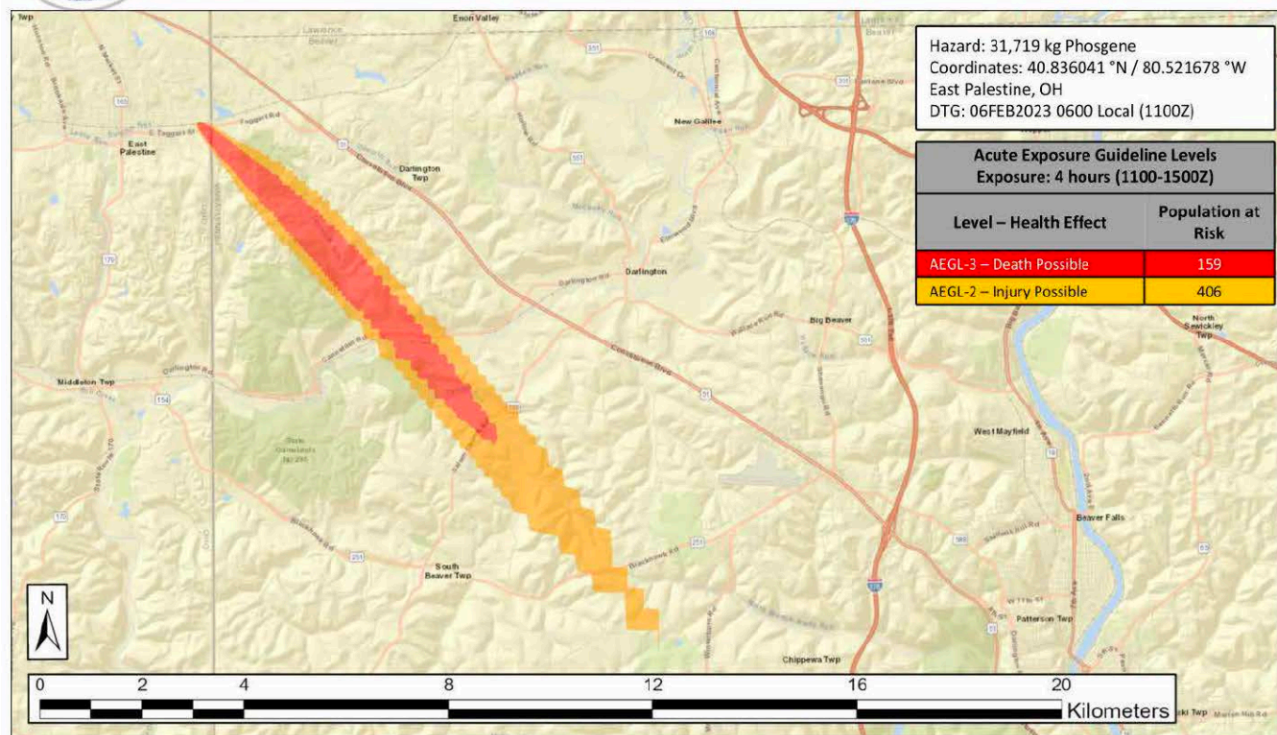
5



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RFI 22-0081eU

Phosgene – 0600 Local



CUI

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RFI 22-0081eU

Soot– Surface Dosage – 0600 Local



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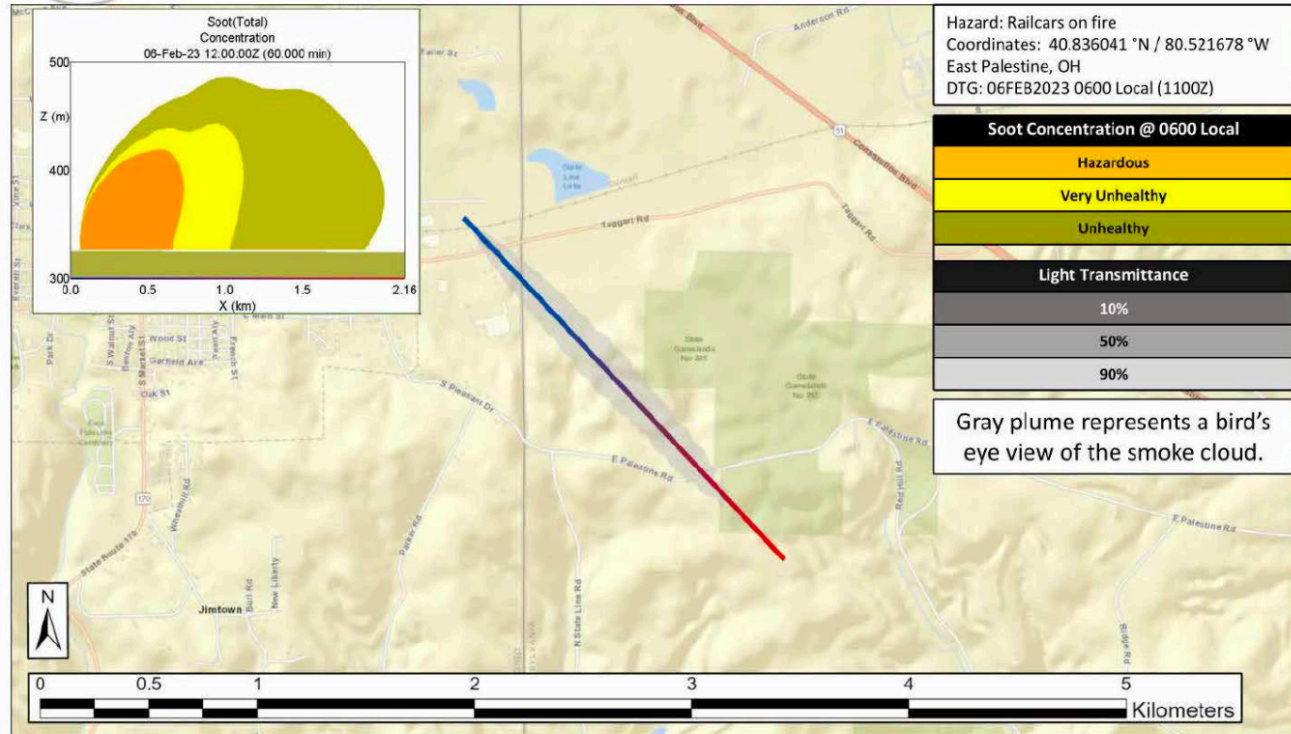
7



CUI

RFI 22-0081eU

Soot – Vertical Profile – 0600 Local

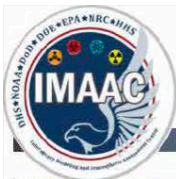


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1200 Local (1700Z)

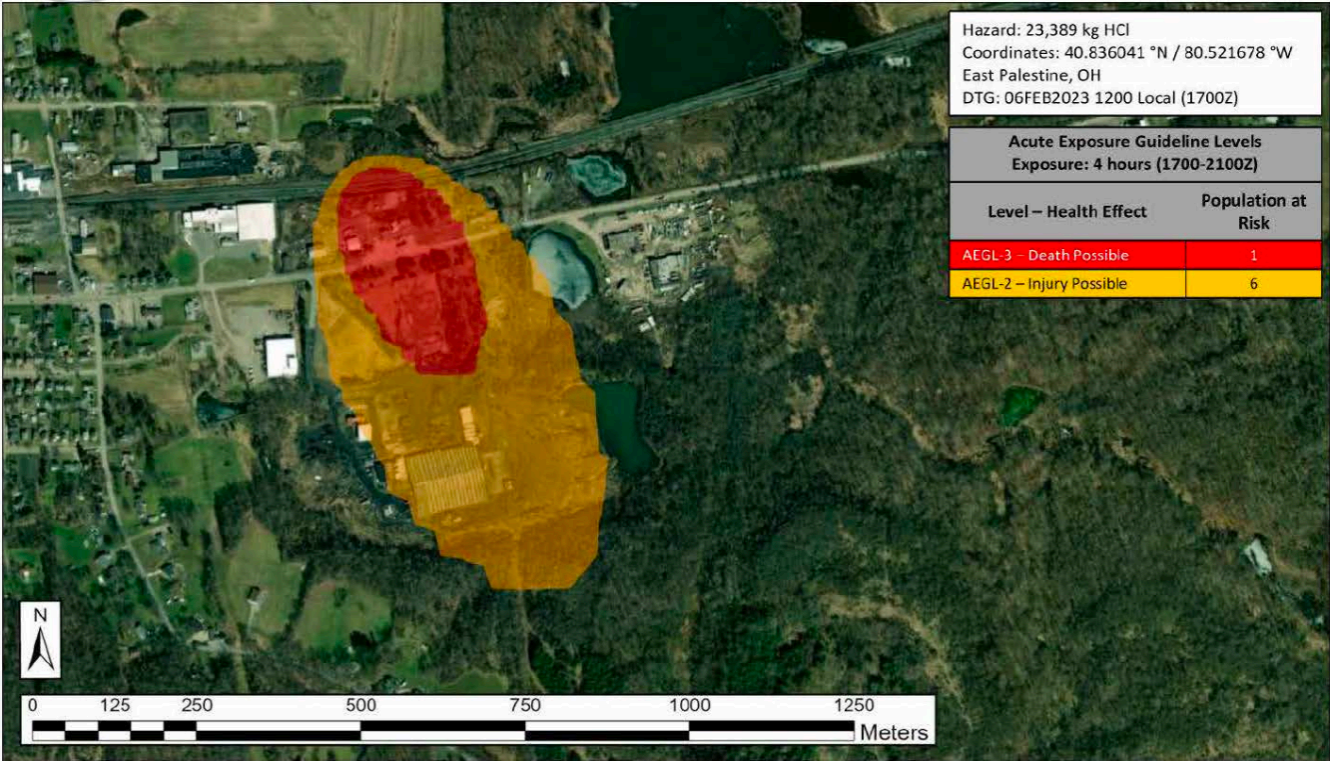
06FEB2023



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RFI 22-0081eU

Hydrogen Chloride – 1200 Local



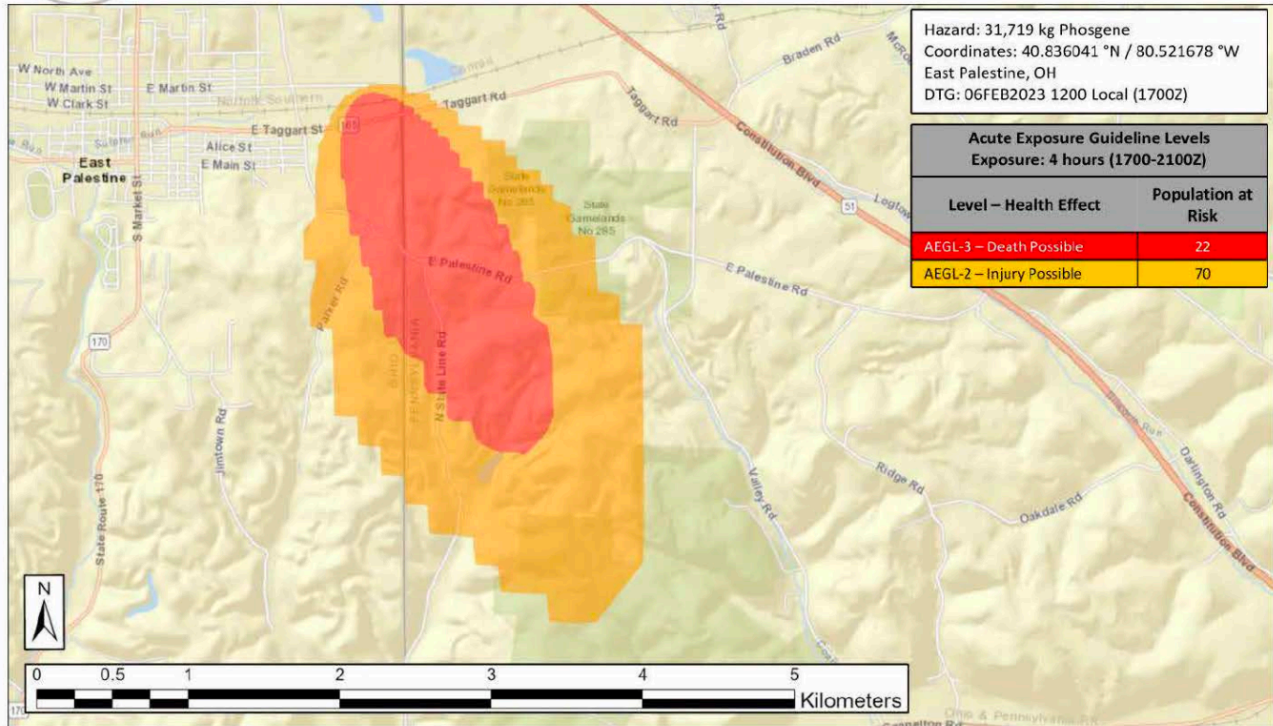
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RFI 22-0081eU

Phosgene – 1200 Local



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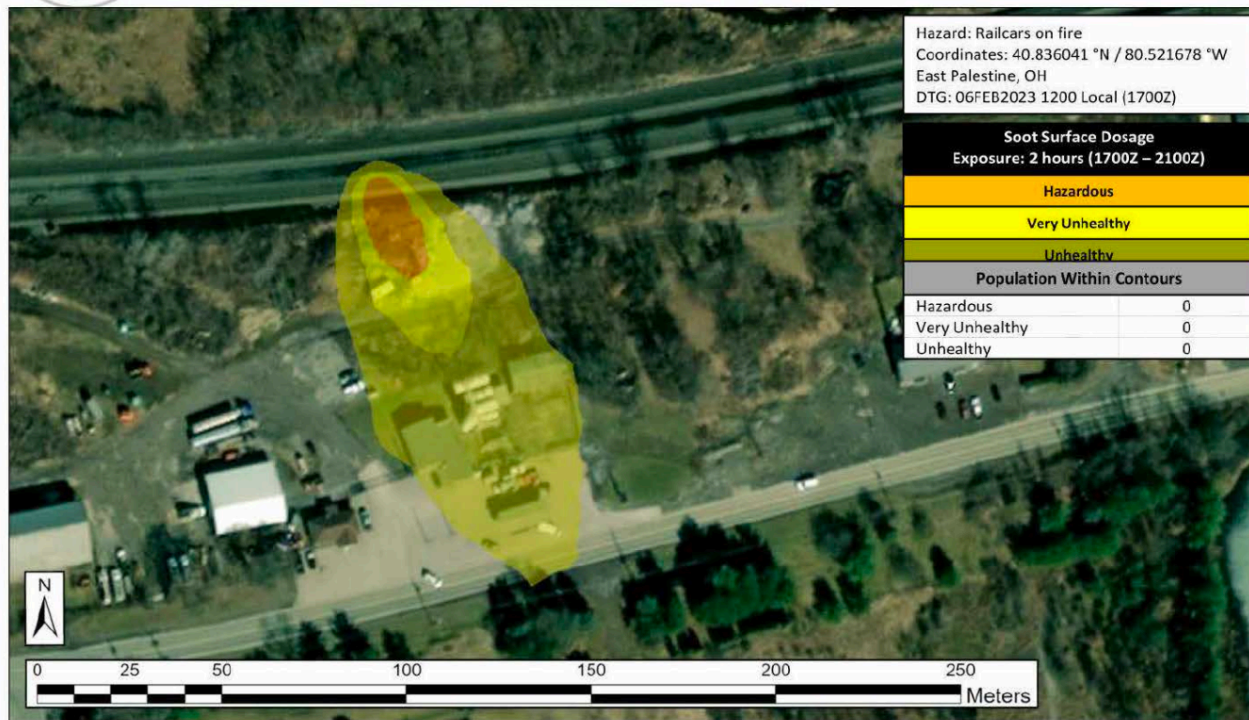
11



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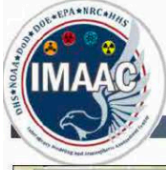
RFI 22-0081eU

Soot– Surface Dosage – 1200 Local



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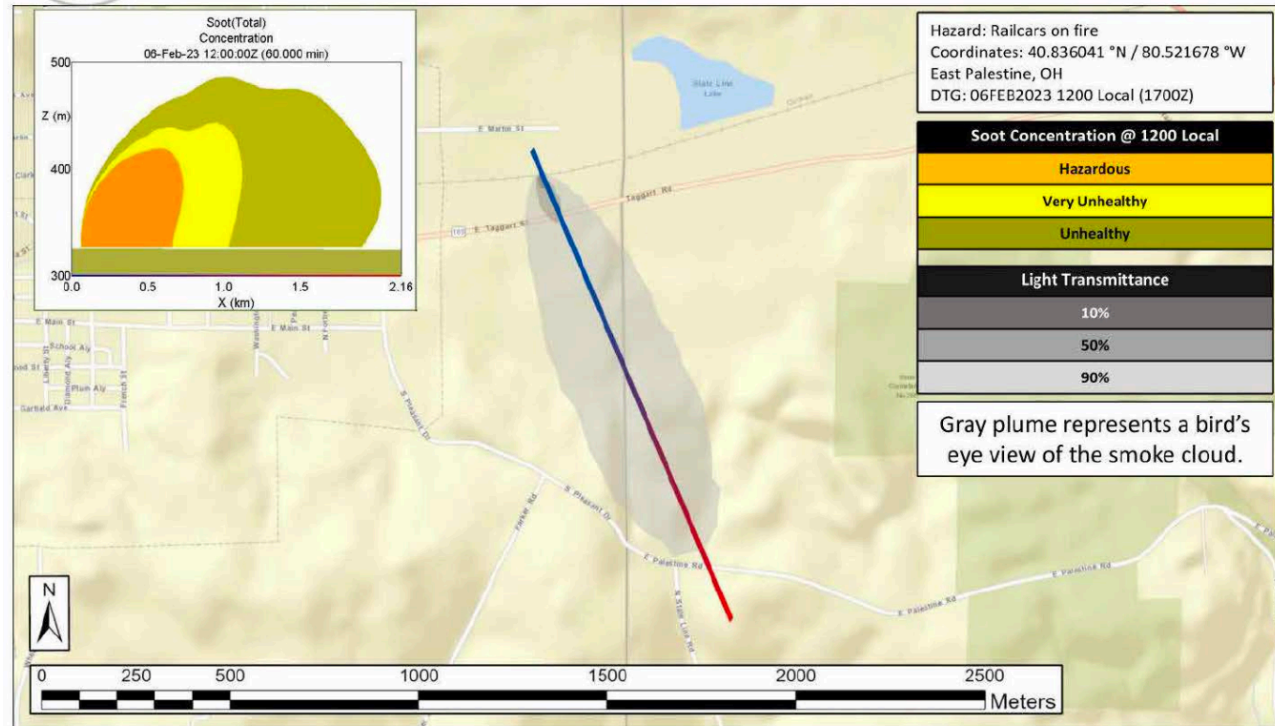
12



CUI

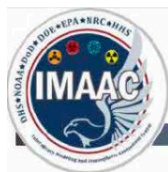
RFI 22-0081eU

Soot – Vertical Profile – 1200 Local



CUI

13



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

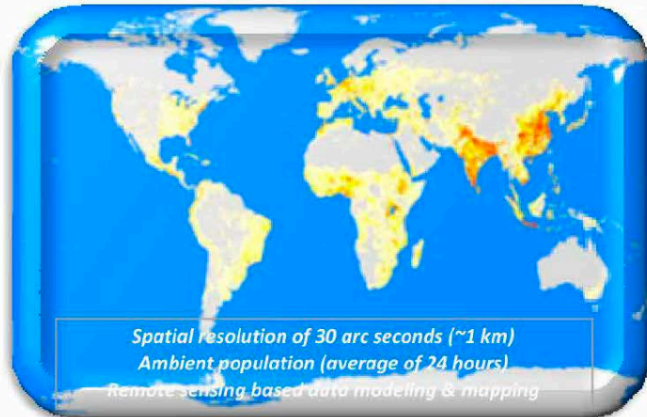
AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

EXHIBIT 7

Feb. 6, 2023, Revision F RFI 23-0081fU IMAAC

~~CUI~~

Date: 06FEB2023 1045Z

Version: Revision F

Changes: Added BLEVE Scenario



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH

(RFI 23-0081fU)

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Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-

~~CUI~~



~~CUI~~

RFI 22-0081fU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	(b) (6)
Request	Model railcars filled with vinyl chloride in fire.
Employment	Real World
Hazards	Combustion products of 5 railcars on fire, filled with vinyl chloride resulting in releases of: • 23,389 kg hydrogen chloride (HCl) • 31,719 kg phosgene (CCl₂O) • HCl BLEVE
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 0600 06FEB2023 Local (1100Z) 2. 1200 06FEB2023 Local (1700Z)
Executive Summary	• For phosgene at 0600 and 1200 Local, 163 and 119 people respectively are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 29 and 24 people respectively may be exposed to hazard levels that could possibly result in death. (0600 local model shows fewer at risk). • For HCl at 0600 and 1200 Local, 4 and 5 people respectively are estimated to be exposed to hazard levels that could possibly result in at least severe injury. Of this group, 2 and 1 people respectively may be exposed to hazard levels that could possibly result in death. • BLEVE from vaporized HCl can produce minor injuries out to 226 meters in a worst case scenario.

~~CUI~~



Assumptions & Comments

- No additional information was provided on the fire that continues to burn, and no changes were made to the modeled amounts and fire intensity. As a result, populations at risk in this update may be overstated.
- Model assumes 5 railcars of vinyl chloride burning.
- Quantity per railcar from requestor: (178,000 lb ~ 81,000 kg).
- Worst-case situations are modeled, in which the vinyl chloride is wholly consumed in the fire and converts completely to either hydrogen chloride or phosgene.
- Hydrogen chloride is a combustion byproduct of vinyl chloride.
- Reports exist of vinyl chloride decomposing to phosgene. Amounts modeled likely overstate the expected hazard and be considered an absolute worst-case hazard (upper bound).
- A worse case BLEVE outcome is provided, where all available HCl is vaporized into a pressure wave. HCl is non-flammable and does not pose a thermal hazard.

0600 Local (1100Z)

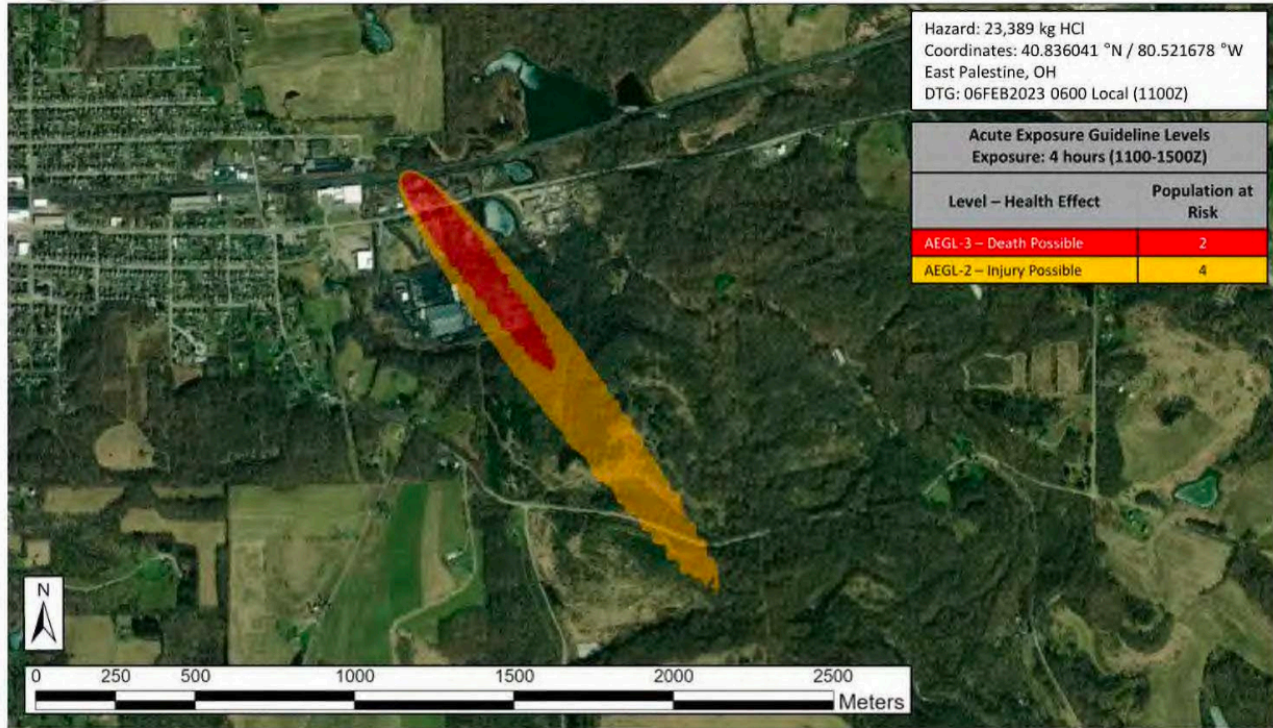
06FEB2023



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RFI 22-0081fU

Hydrogen Chloride – 0600 Local



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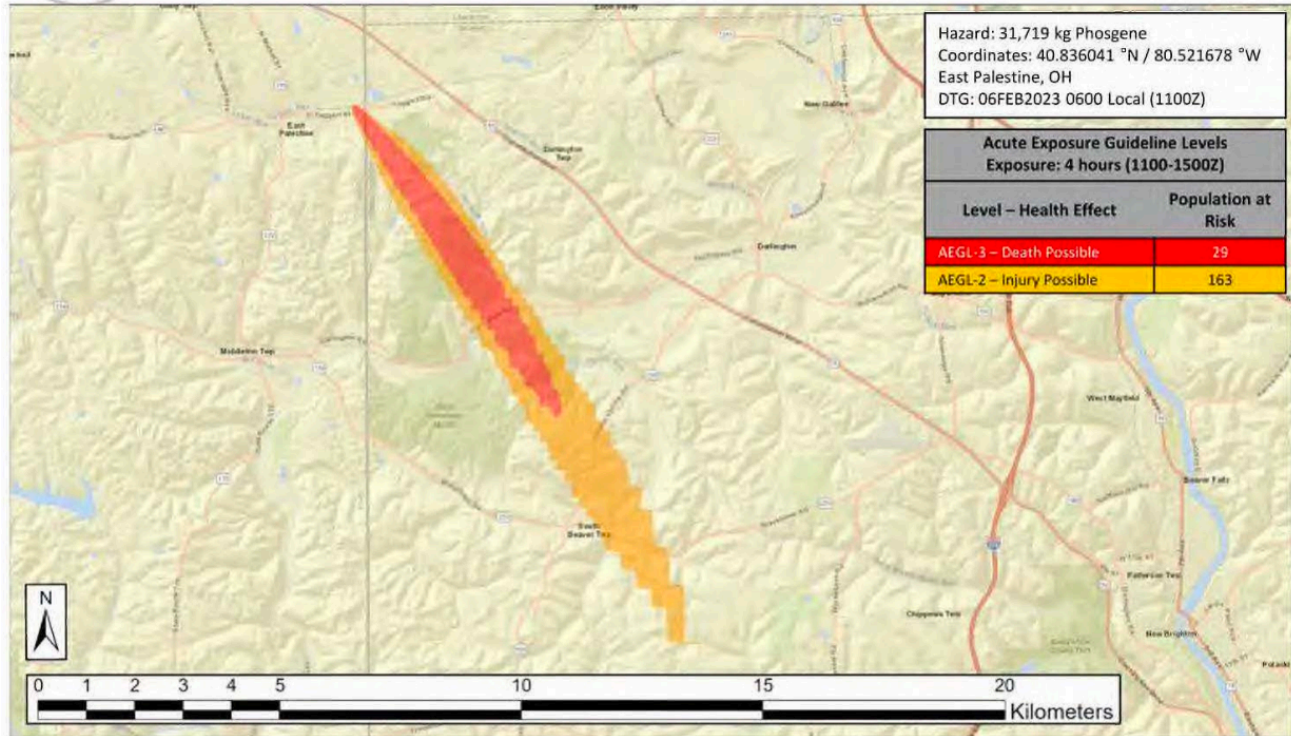
5



—CUI—

RFI 22-0081fU

Phosgene – 0600 Local



—CUI—

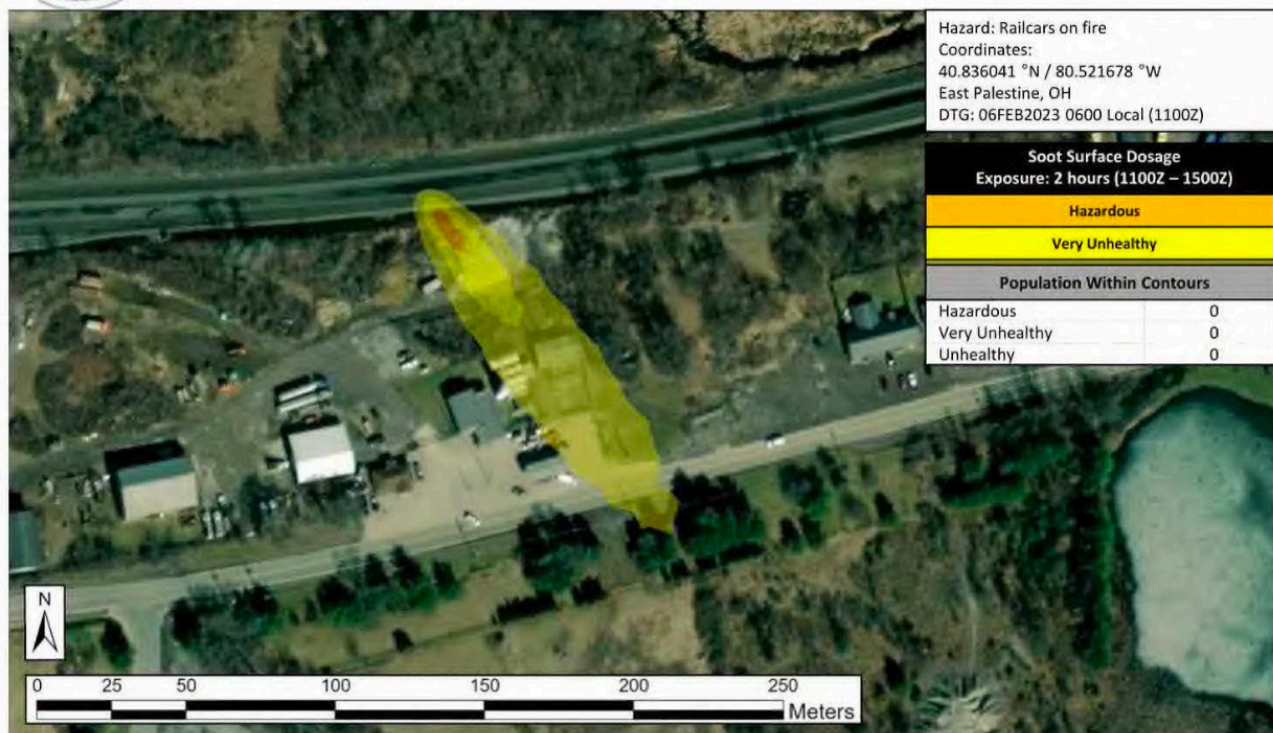
6



—CUI—

RFI 22-0081fU

Soot– Surface Dosage – 0600 Local



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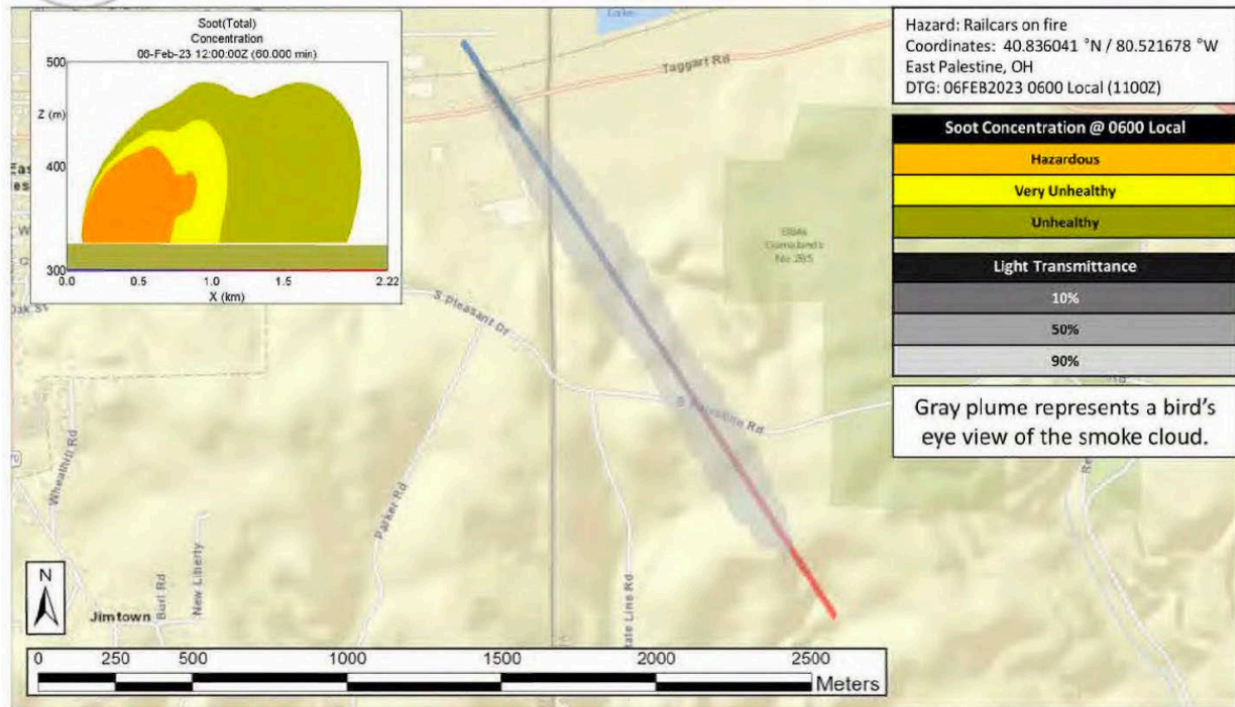
7



CUI

RFI 22-0081FU

Soot – Vertical Profile – 0600 Local



CUI

8

1200 Local (1700Z)

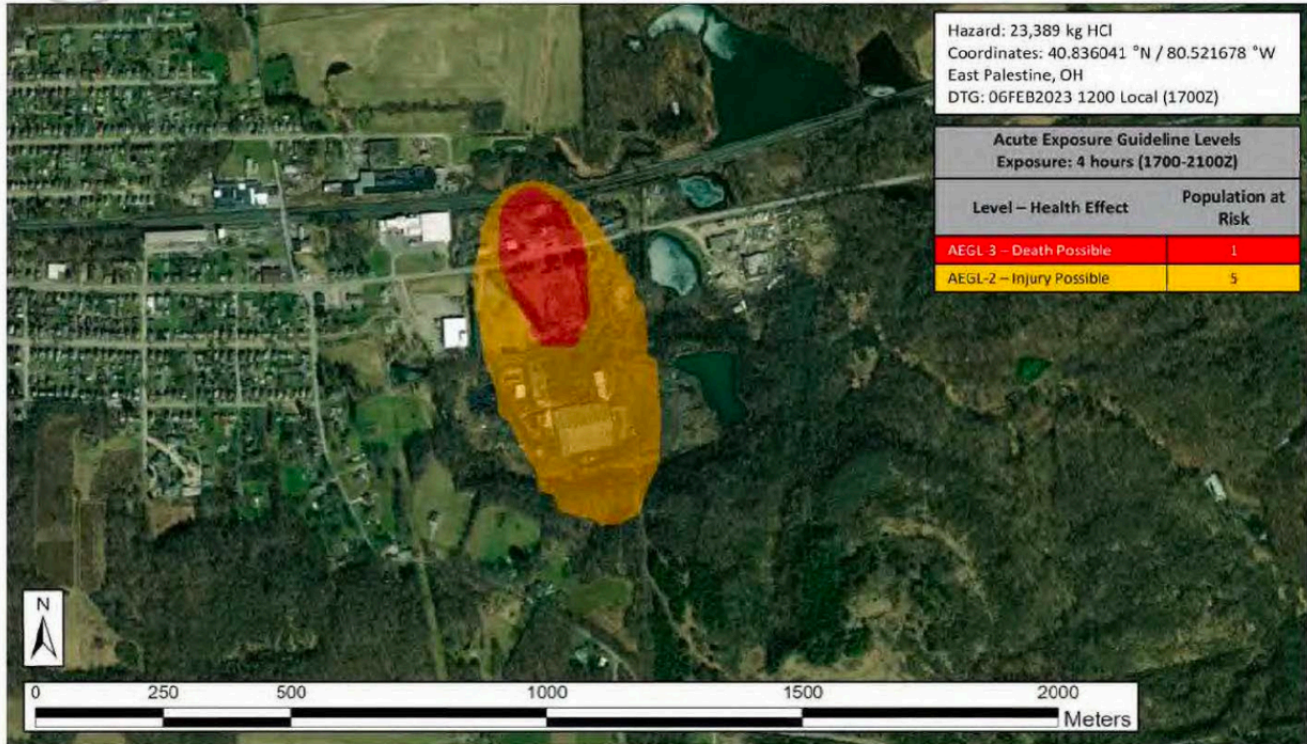
06FEB2023



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RFI 22-0081FU

Hydrogen Chloride – 1200 Local



—CUI—

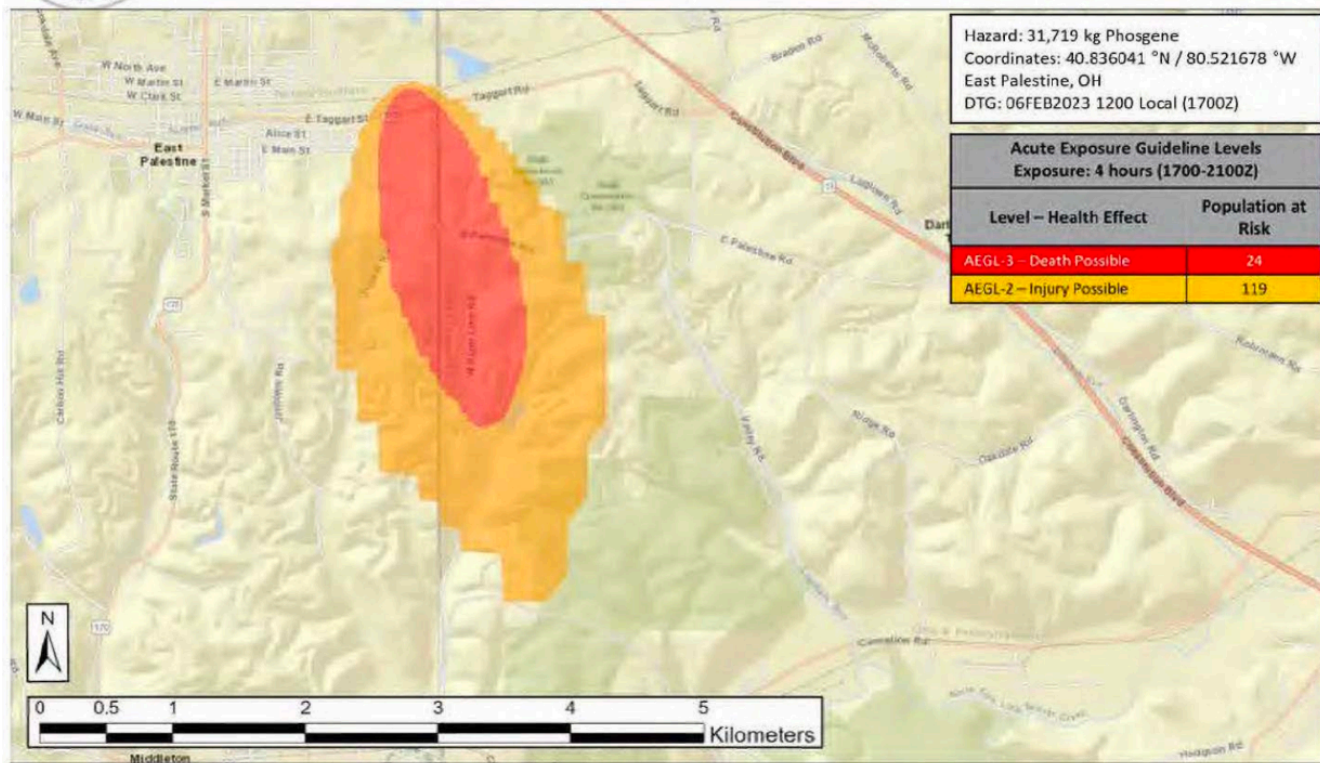
10



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RFI 22-0081FU

Phosgene – 1200 Local



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RFI 22-0081fU

Soot– Surface Dosage – 1200 Local



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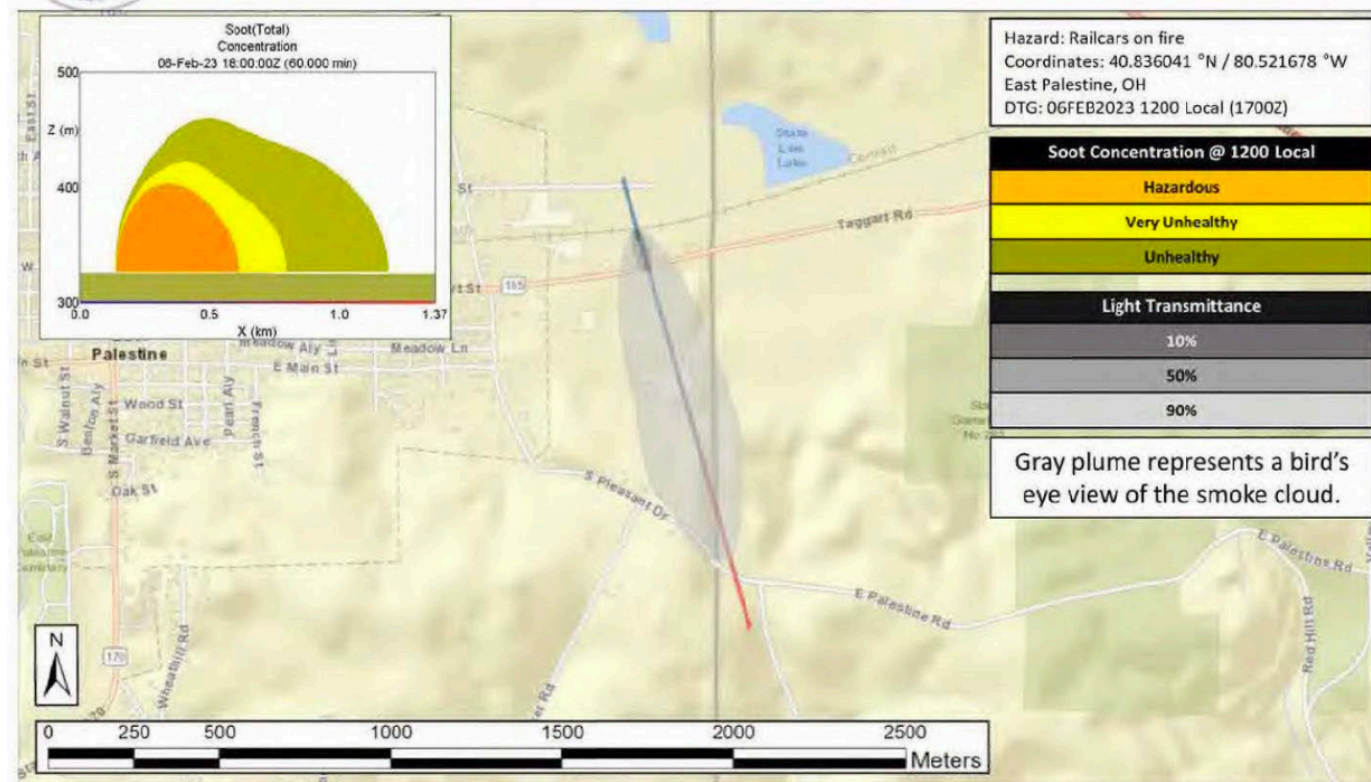
12



CU

RFI 22-0081FU

Soot – Vertical Profile – 1200 Local



CU



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

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Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



~~CUI~~

RFI 22-0081fu

BLEVE Scenario

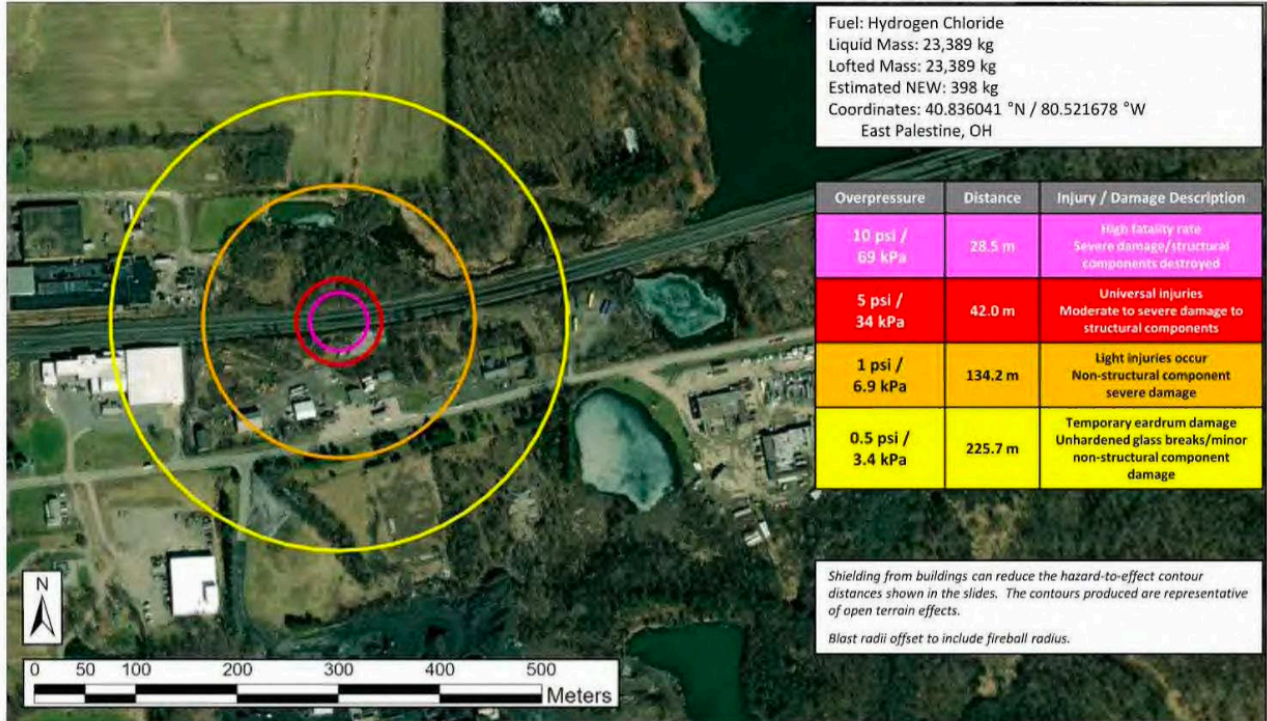
06FEB2023

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BLEVE/VCE Blast Human Injury & Structural Damage Contours





BLEVE/VCE Blast Human Injury & Structural Damage Contours

	Personnel	Glass	Wood	Metal	Steel Frame	Concrete Block	Reinforced Concrete
10 psi / 69 kPa	>50% eardrum rupture, high fatality rate	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Collapse	Collapse	Severe damage / structural components destroyed
5 psi / 34 kPa	Chance eardrum rupture, injuries are universal	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Severe damage	Severe damage	Moderate damage to structural components
1 psi / 6.9 kPa	Temporary eardrum damage, light injuries occur	Shatters	Studs, sheathing cracked	Severe buckling, some panels torn off	Minor damage	Severe damage	N/A
0.5 psi / 3.4 kPa	Temporary eardrum damage	Shatters	Rafters cracked	Moderate buckling, joints separated	N/A	N/A	N/A

BLEVE- Boiling Liquid Expanding Vapor Explosion

- Liquid is heated in a sealed vessel above its boiling point creating pressure. If the vessel fails the fluid vaporizes almost instantly and expands radially with a subsonic blast wave
- Need not be flammable

VCE- Vapor Cloud Explosion

- A flammable material is dispersed through the air which ignites
- Prompt ignition is non-detonable, delayed ignition potentially (though unlikely) detonable
- Fireball and thermal radiation may ignite nearby combustible materials

Shielding from buildings can reduce the hazard-to-effect contour distances shown in the slides; contours are representative of open terrain effects.

Sources: "Explosive shock in air" Kinney & Grahm, 1985; "Facility damages and personnel injury from explosive blast", Montgomery & Ward, 1993; "The effects of nuclear weapons", 3rd edition, Glasstone & Dolan, 1977

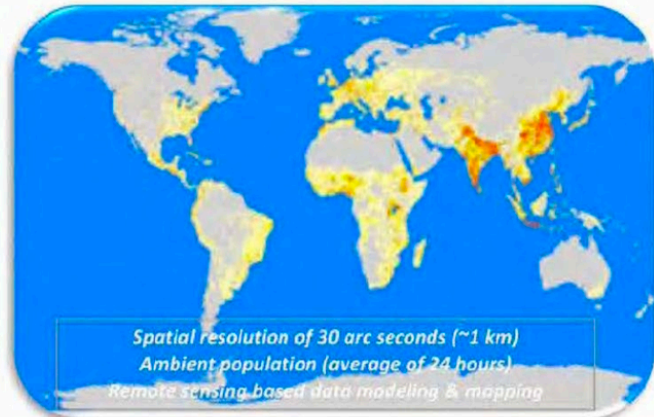


—CUI—

RFI 22-0081fU

Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

—CUI—

18

EXHIBIT 8

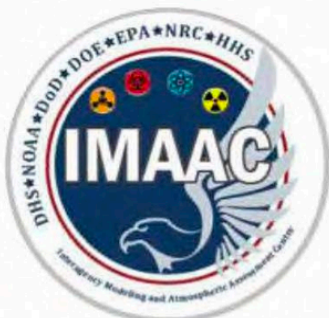
Feb. 6, 2023, Revision G RFI 23-0081gU IMAAC

—CUI—

Date: 06FEB2023 1745Z

Version: Revision G

Changes: Planned breach model; adjusted amounts (see Slide #3)



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH (RFI 23-0081gU)

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Distribution Statement C: Distribution authorized to U.S. Government agencies and their contractors [Critical Technology; 06FEB2023]. Other requests for this document should be referred to the Defense Threat Reduction Agency/SCR, 8725 John J. Kingman Road, Mail Stop 6201, Fort Belvoir, VA 22060-6201.

Controlled by: Defense Threat Reduction Agency
Controlled by: Research and Development
CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

—CUI—

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-



~~CUI~~

RFI 22-0081gU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	(b) (6)
Request	Model planned breach of railcar filled with vinyl chloride.
Employment	Real World
Hazards	Release from 1 single railcar, filled with vinyl chloride resulting in releases of: • 146,135 kg hydrogen chloride (HCl) • 216 kg phosgene (CCl₂O) • 27,995 kg of vinyl chloride • <i>Amounts based on information from Ohio CST via Norfolk Southern</i>
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 1400 06FEB2023 Local (1900Z)
Executive Summary	• For the largest plume (HCl) the plume extends over one mile downrange for AEGL-2 (serious injury possible) effects. • Please note that plume predictions have inherent uncertainty – effects may occur outside the contours shown • BLEVE scenario can produce minor injuries out to 226 meters.

~~CUI~~

2



Modeling Overview

- A breach of five containers of vinyl chloride is considered. This results in some level of combustion/explosion. Based on reports from shipper, the estimated total load is approximately 3.5 cars' worth.
- Modeling is provided in the event of a planned breach of the container.
- A BLEVE, as a result of or during the breach, is possible. **This analysis does not make recommendations on how to conduct this breach.**
- Quantity per railcar: 178,000 lb ~ 81,000 kg

(b)(3)10USC130

- Blast effects from a BLEVE is provided.



Caveats

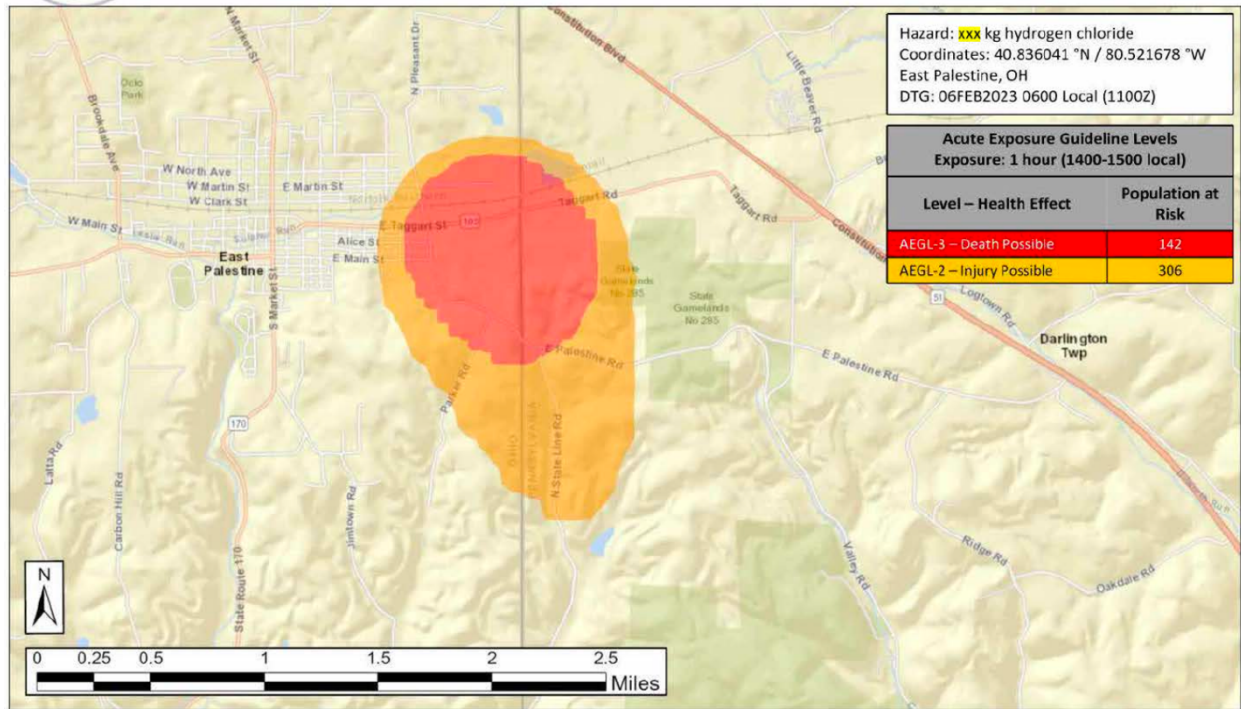
- The partitioning of the various chemicals is not fully known. We have made best estimates based on available literature and stoichiometry.
- As with the partitioning, estimates of the buoyancy induced by the fire and a possible explosion may not be accurately accounted for.
- There may be synergistic toxicological effects from exposure to multiple chemicals. Our modeling does not have the ability to account for this.
- Due to evacuations and responding personnel on the scene, population estimates may not reflect actual population distribution around the incident.



CUI

RFI 22-0081gU

Hydrogen Chloride – 1400 Local



CUI

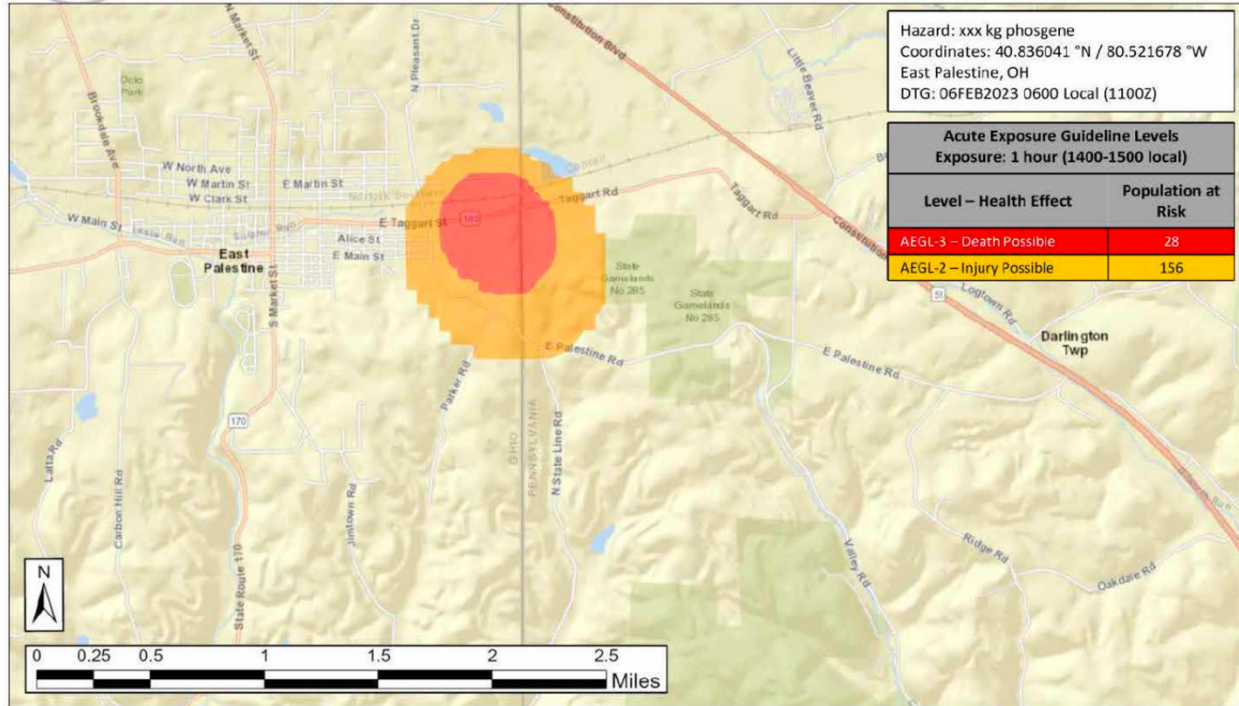
5



CUI

RFI 22-0081gU

Phosgene – 1400 Local



CUI

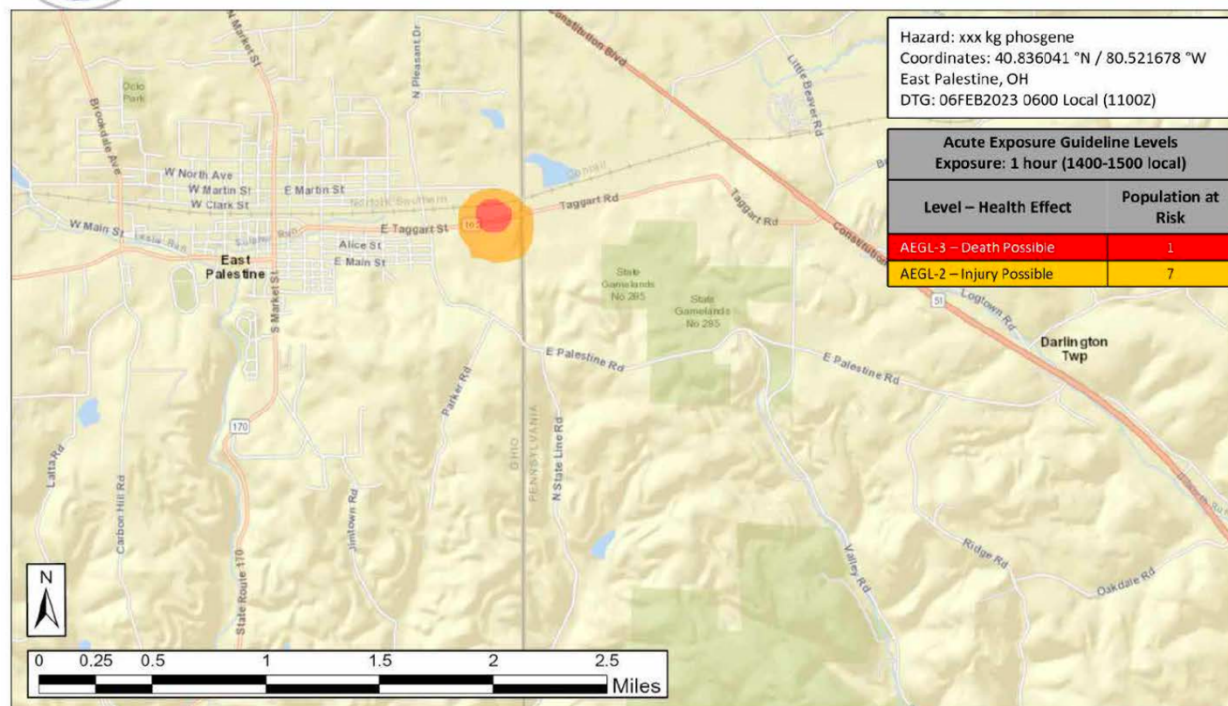
6



CUI

RFI 22-0081gU

Vinyl Chloride – 1400 Local



CUI

7



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

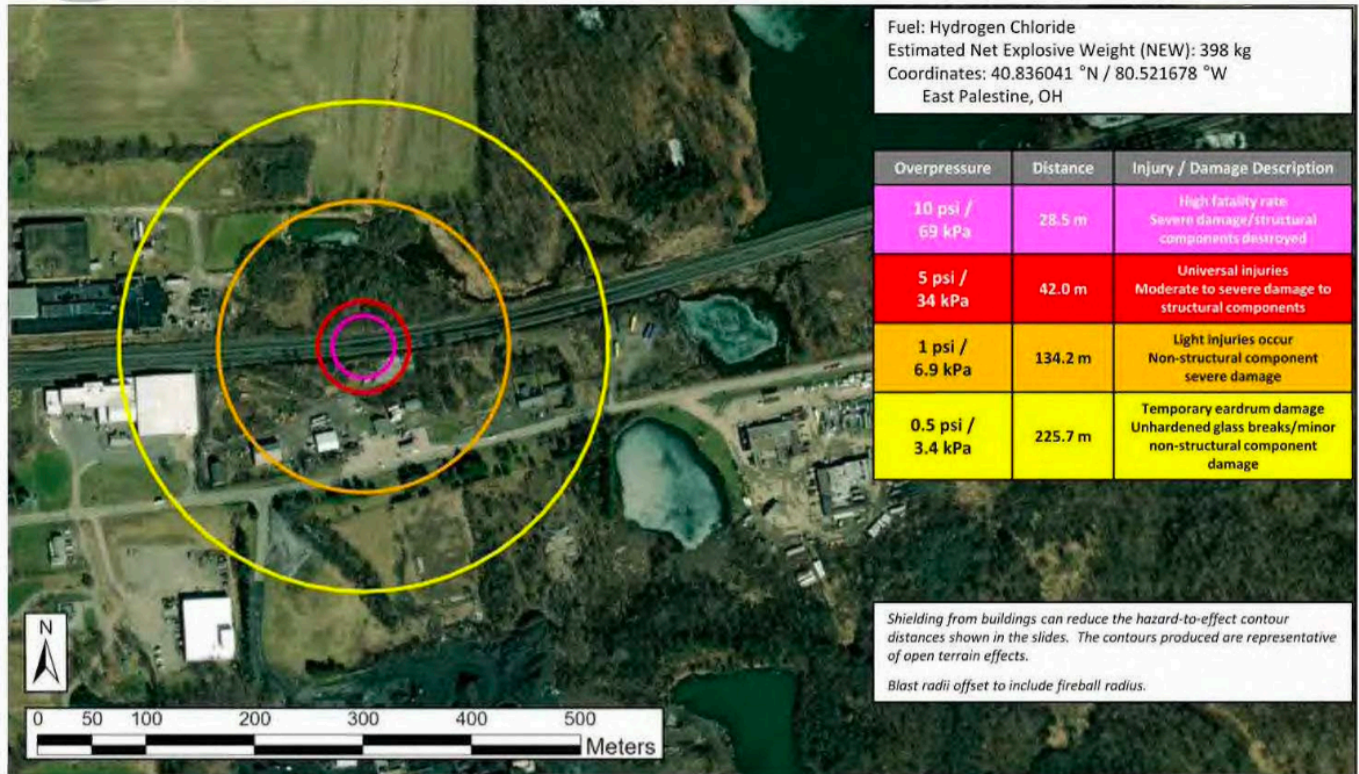
INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



BLEVE/VCE Blast Human Injury & Structural Damage Contours





BLEVE/VCE Blast Human Injury & Structural Damage Contours

	Personnel	Glass	Wood	Metal	Steel Frame	Concrete Block	Reinforced Concrete
10 psi / 69 kPa	>50% eardrum rupture, high fatality rate	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Collapse	Collapse	Severe damage / structural components destroyed
5 psi / 34 kPa	Chance eardrum rupture, injuries are universal	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Severe damage	Severe damage	Moderate damage to structural components
1 psi / 6.9 kPa	Temporary eardrum damage, light injuries occur	Shatters	Studs, sheathing cracked	Severe buckling, some panels torn off	Minor damage	Severe damage	N/A
0.5 psi / 3.4 kPa	Temporary eardrum damage	Shatters	Rafters cracked	Moderate buckling, joints separated	N/A	N/A	N/A

BLEVE- Boiling Liquid Expanding Vapor Explosion

- Liquid is heated in a sealed vessel above its boiling point creating pressure. If the vessel fails the fluid vaporizes almost instantly and expands radially with a subsonic blast wave
- Need not be flammable

VCE- Vapor Cloud Explosion

- A flammable material is dispersed through the air which ignites
- Prompt ignition is non-detonable, delayed ignition potentially (though unlikely) detonable
- Fireball and thermal radiation may ignite nearby combustible materials

Shielding from buildings can reduce the hazard-to-effect contour distances shown in the slides; contours are representative of open terrain effects.

Sources: "Explosive shock in air" Kinney & Graham, 1985; "Facility damages and personnel injury from explosive blast", Montgomery & Ward, 1993; "The effects of nuclear weapons", 3rd edition, Glasstone & Dolan, 1977

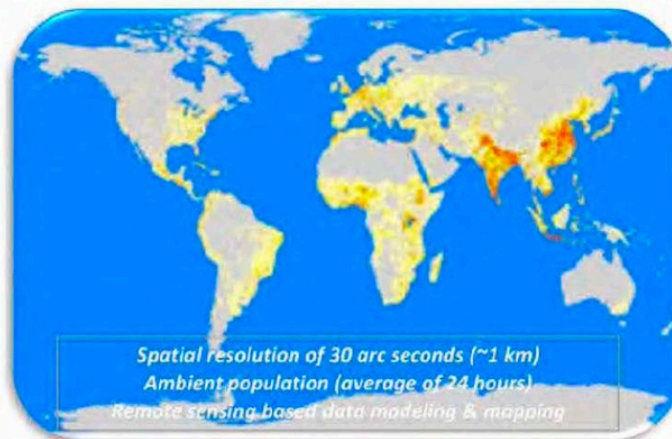


CUI

RFI 22-0081gU

Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

CUI

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EXHIBIT 9

Feb. 6, 2023, Revision H RFI 23-0081hU IMAAC

~~CUI~~

Date: 06FEB2023 1745Z

Version: Revision H

Changes: Planned breach model; adjusted amounts (see Slide #3)



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH

(RFI 23-0081hU)

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Distribution Statement C: Distribution authorized to U.S. Government agencies and their contractors [Critical Technology; 06FEB2023]. Other requests for this document should be referred to the Defense Threat Reduction Agency/SCR, 8725 John J. Kingman Road, Mail Stop 6201, Fort Belvoir, VA 22060-6201.

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CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

RD Directorate
Technical Reachback Division
(703) 767-3445, DSN 427-

~~CUI~~



~~CONFIDENTIAL~~

RFI 22-0081hU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	(b) (6)
Request	Model planned breach of railcar filled with vinyl chloride.
Employment	Real World
Hazards	Release from 5 railcars, filled with vinyl chloride resulting in releases of: • 146,135 kg hydrogen chloride (HCl) • 216 kg phosgene (CCl₂O) • 27,995 kg of vinyl chloride • <i>Amounts based on information from Ohio CST via Norfolk Southern</i>
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 1530 06FEB2023 Local (2030Z) 2. 1800 06FEB2023 Local (2030Z)
Executive Summary	• For the largest plume (HCl) the plume extends over one mile downrange for AEGL-2 (serious injury possible) effects. • Please note that plume predictions have inherent uncertainty – effects may occur outside the contours shown • BLEVE scenario can produce minor injuries out to 226 meters.

~~CONFIDENTIAL~~

2



Modeling Overview

- A breach of five containers of vinyl chloride is considered. This results in some level of combustion/explosion. Based on reports from shipper, the estimated total load is approximately 3.5 cars' worth.
- Modeling is provided in the event of a planned breach of the container.
- A BLEVE, as a result of or during the breach, is possible. **This analysis does not make recommendations on how to conduct this breach.**
- Quantity per railcar: 178,000 lb ~ 81,000 kg

(b) (6)

- Blast effects from a BLEVE is provided.



Caveats

- The partitioning of the various chemicals is not fully known. We have made best estimates based on available literature and stoichiometry.
- As with the partitioning, estimates of the buoyancy induced by the fire and a possible explosion may not be accurately accounted for.
- There may be synergistic toxicological effects from exposure to multiple chemicals. Our modeling does not have the ability to account for this.
- Due to evacuations and responding personnel on the scene, population estimates may not reflect actual population distribution around the incident.

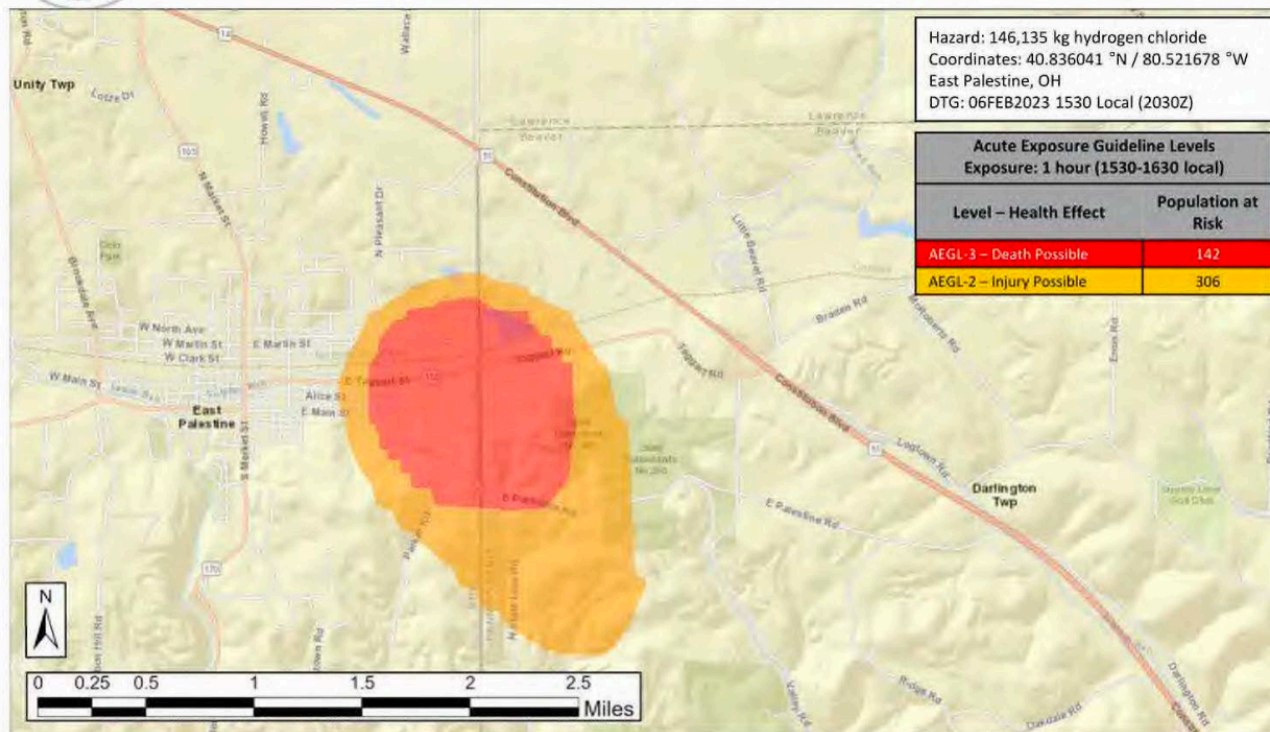
3:30PM Breach (2030Z)
06 FEB 2023



CUI

RFI 22-0081hU

Hydrogen Chloride – 1530 Local



CUI

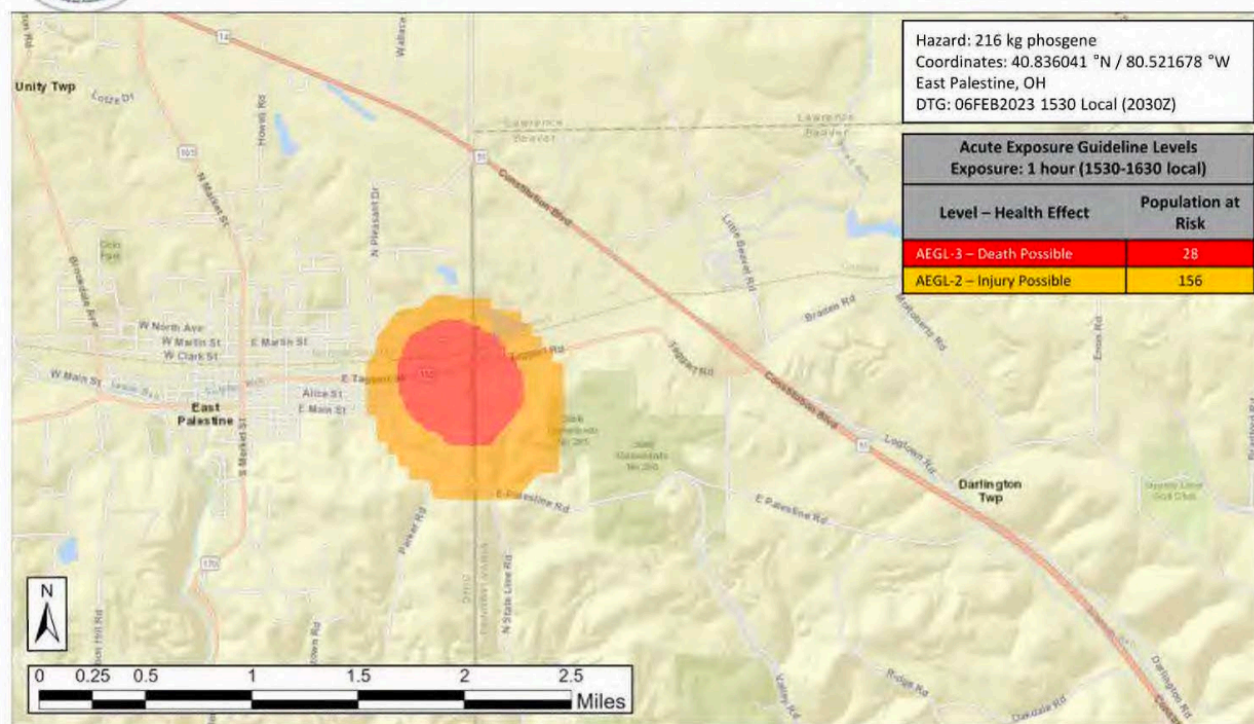
6



— CUI —

RFI 22-0081hU

Phosgene – 1530 Local



— CUI —

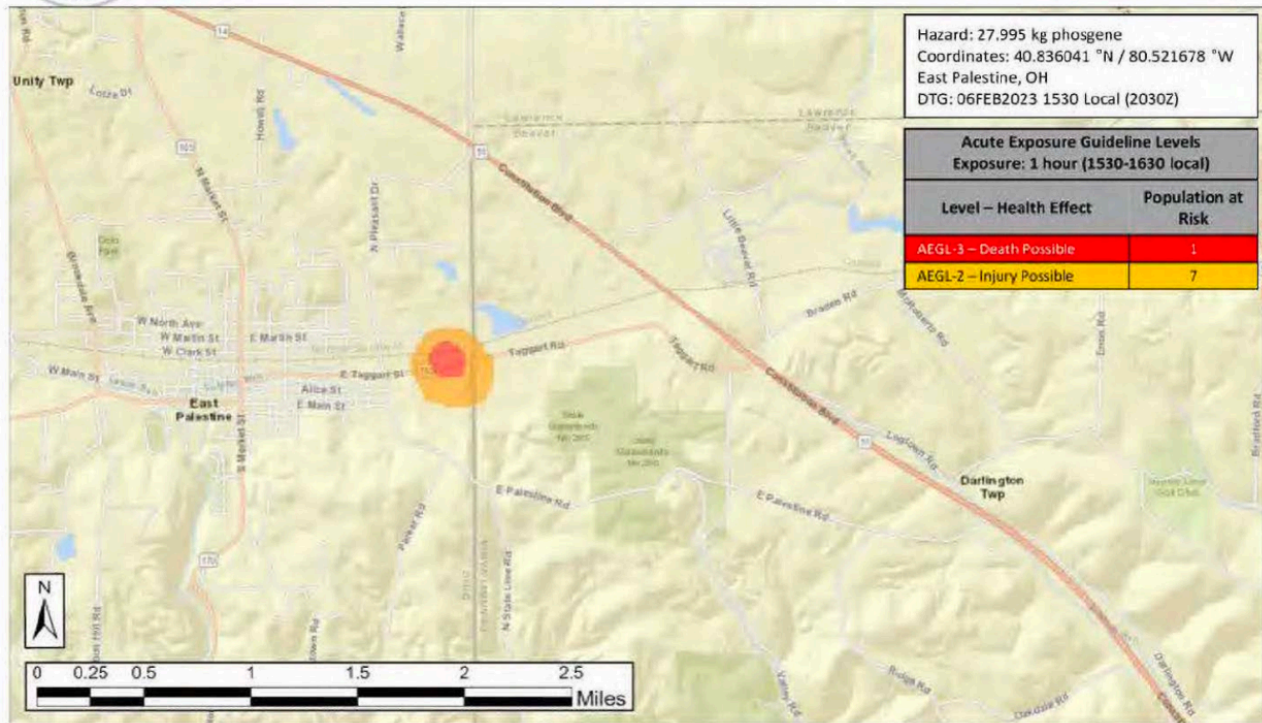
7



CUI

RFI 22-0081HU

Vinyl Chloride – 1530 Local



CUI

8

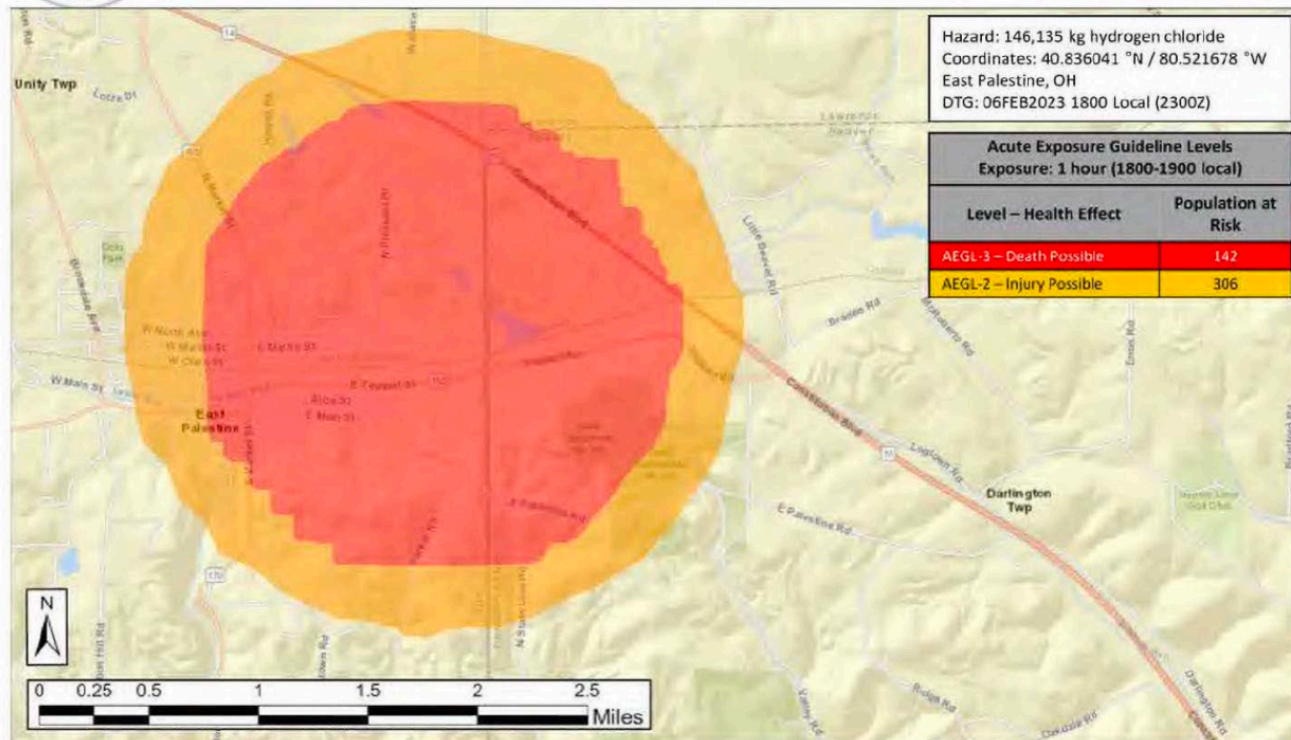
6:00PM Breach (2300Z)
06 FEB 2023



CUI

RFI 22-0081hU

Hydrogen Chloride – 1800 Local



CUI

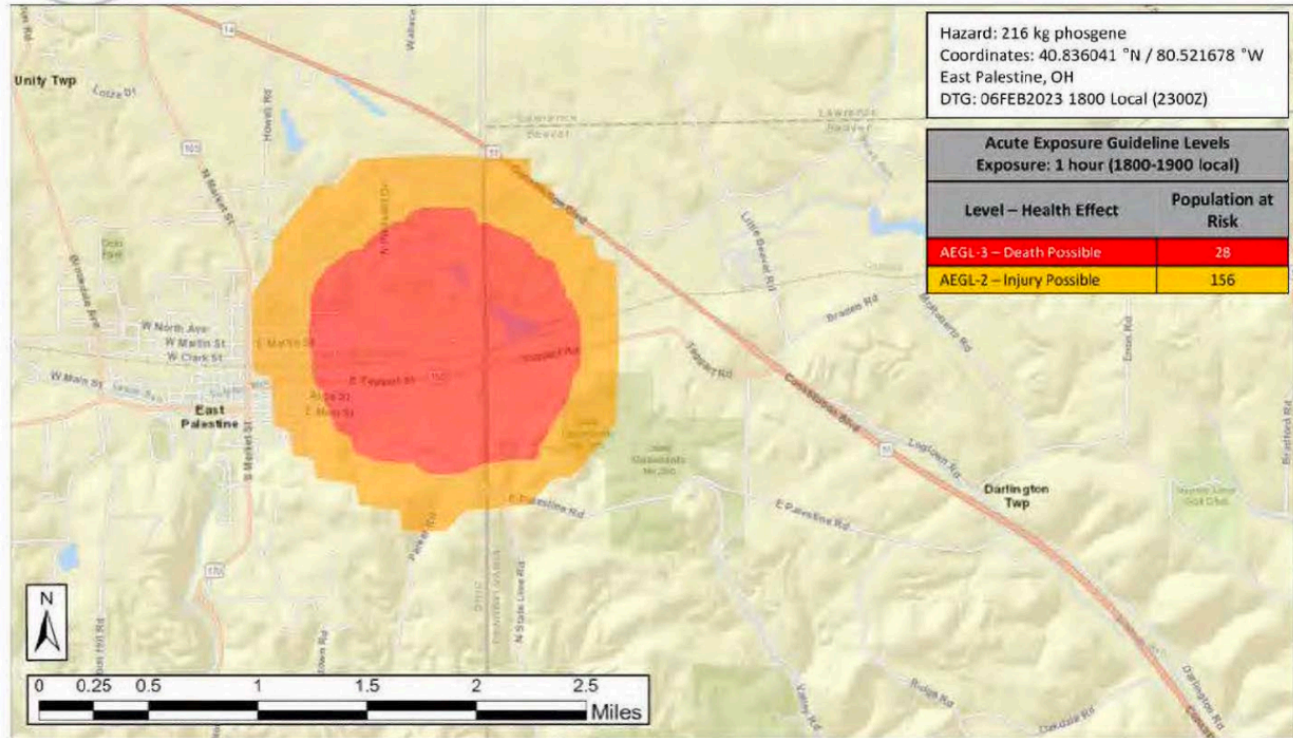
10



CUI

RFI 22-0081hU

Phosgene – 1800 Local



CUI

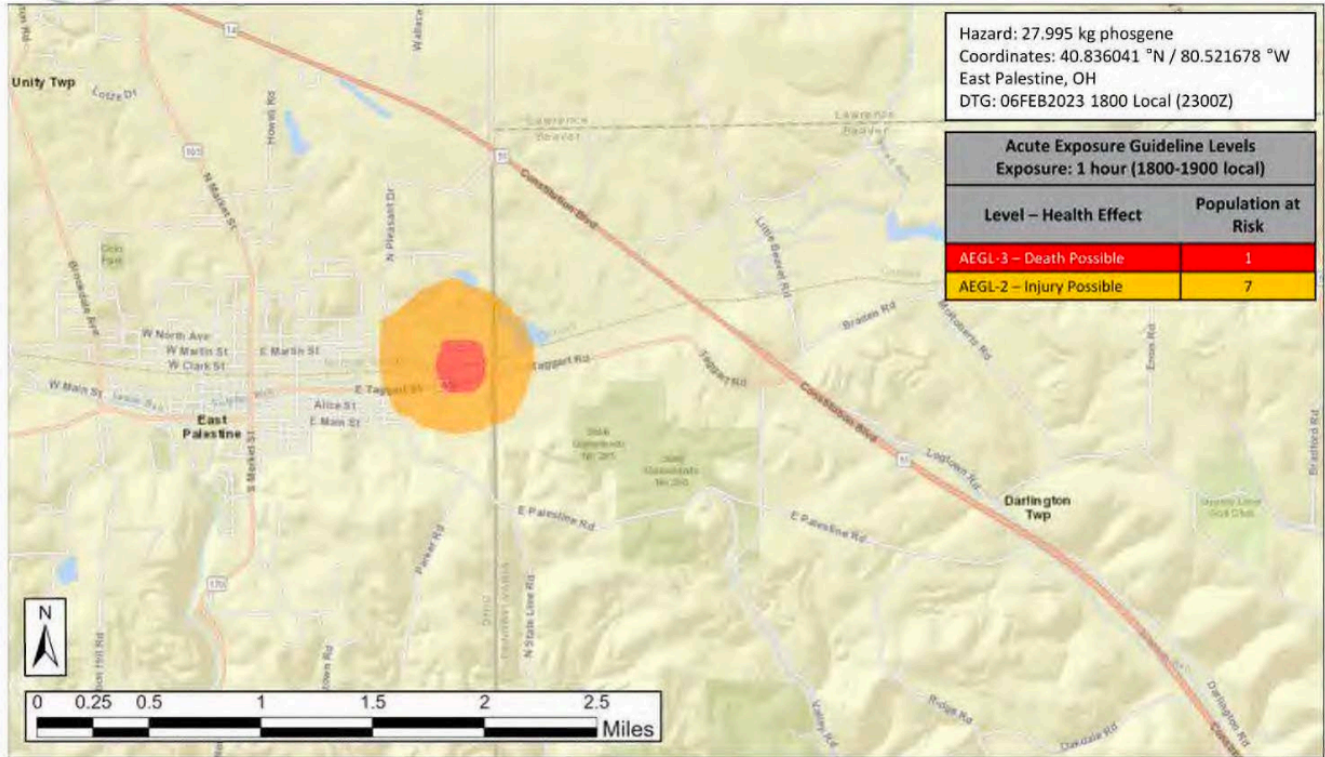
11



—CUI—

RFI 22-0081hU

Vinyl Chloride – 1800 Local



—CUI—

12



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

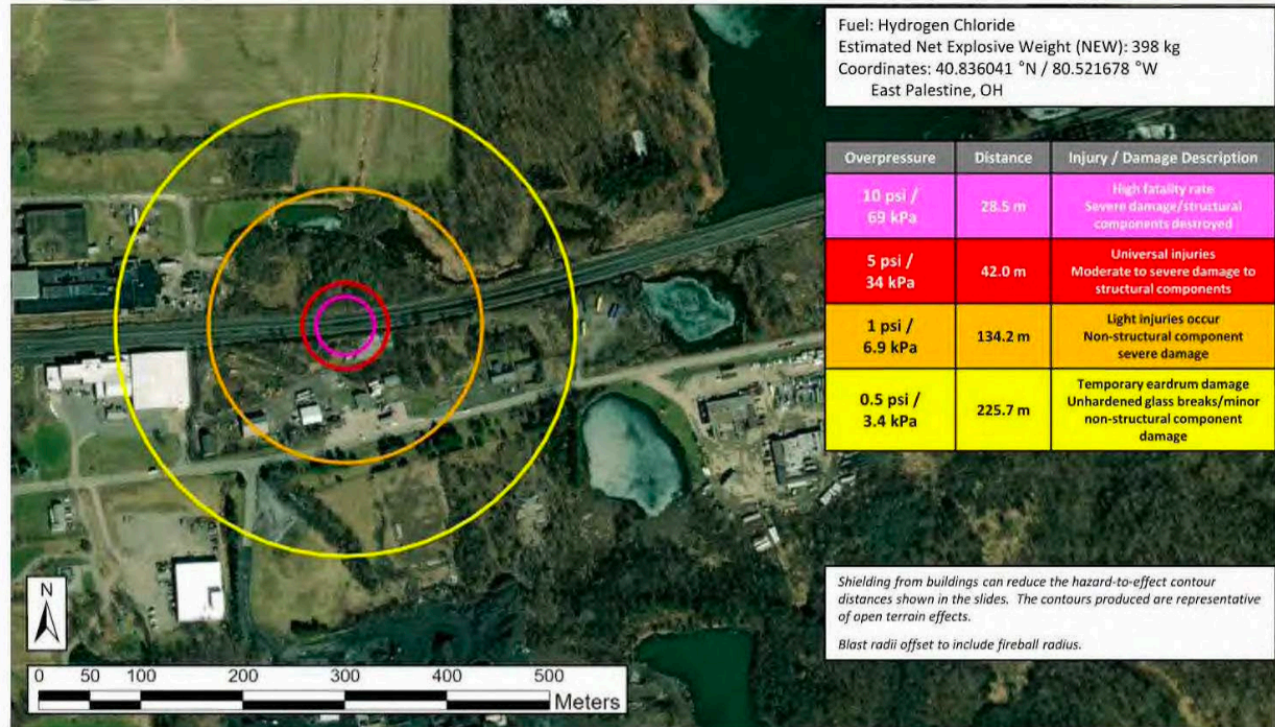
INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



BLEVE/VCE Blast Human Injury & Structural Damage Contours





BLEVE/VCE Blast Human Injury & Structural Damage Contours

	Personnel	Glass	Wood	Metal	Steel Frame	Concrete Block	Reinforced Concrete
10 psi / 69 kPa	>50% eardrum rupture, high fatality rate	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Collapse	Collapse	Severe damage / structural components destroyed
5 psi / 34 kPa	Chance eardrum rupture, injuries are universal	Shatters, severe frame failure	Collapse, complete destruction	Siding and interior destroyed	Severe damage	Severe damage	Moderate damage to structural components
1 psi / 6.9 kPa	Temporary eardrum damage, light injuries occur	Shatters	Studs, sheathing cracked	Severe buckling, some panels torn off	Minor damage	Severe damage	N/A
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BLEVE- Boiling Liquid Expanding Vapor Explosion

- Liquid is heated in a sealed vessel above its boiling point creating pressure. If the vessel fails the fluid vaporizes almost instantly and expands radially with a subsonic blast wave
- Need not be flammable

VCE- Vapor Cloud Explosion

- A flammable material is dispersed through the air which ignites
- Prompt ignition is non-detonable, delayed ignition potentially (though unlikely) detonable
- Fireball and thermal radiation may ignite nearby combustible materials

Shielding from buildings can reduce the hazard-to-effect contour distances shown in the slides; contours are representative of open terrain effects.

Sources: "Explosive shock in air" Kinney & Grahm, 1985; "Facility damages and personnel injury from explosive blast", Montgomery & Ward, 1993; "The effects of nuclear weapons", 3rd edition, Glasstone & Dolan, 1977

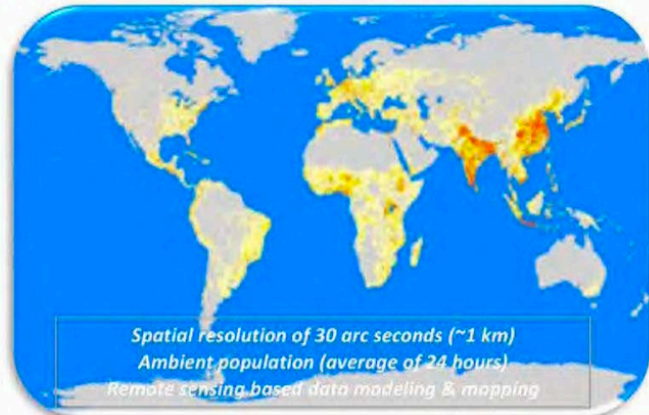


—CUI—

RFI 22-0081hU

Population Data

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- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*
- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.



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—CUI—

16

EXHIBIT 10

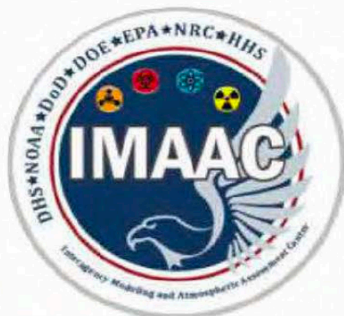
Feb. 7, 2023, Revision I RFI 23-0081iU IMAAC

~~CUI~~

Date: 07FEB2023 1100Z

Version: Revision I

Changes: Adjusted buoyancy, Updated Wx



IMAAC

Interagency Modeling and Atmospheric Assessment Center

REAL WORLD

Train Derailment and Fire in East Palestine, OH (RFI 23-0081iU)

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CUI Category: CTI, EXPT
Distribution/Dissemination Statement: C
POC: RD-OPR, 703-767-3445

RD Directorate
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~~CUI~~

RFI 22-0081iU

Request Summary

Requestor	(b) (6), EPA Region 5, Emergency Response Branch
Contact information	[REDACTED]
Request	Model planned breach of railcar filled with vinyl chloride.
Employment	Real World
Hazards	Release from 5 railcars, filled with vinyl chloride resulting in releases of: • 146,135 kg hydrogen chloride (HCl) • 216 kg phosgene (CCl₂O) • 27,995 kg of vinyl chloride • <i>Amounts based on information from Ohio CST via Norfolk Southern</i>
Location	East Palestine, OH 40.836041 °N / 80.521678 °W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	1. 0600 07FEB2023 Local (2030Z) 2. 1200 07FEB2023 Local (2030Z)
Executive Summary	• The largest AEGL-2 (serious injury possible) hazard area (HCl) extends about 150 feet away from the fire. • Please note that plume predictions have inherent uncertainty – effects may occur outside the contours shown

~~CUI~~

2



~~CUI~~

RFI 22-0081iU

Modeling Overview

- A breach of five mostly-full (70%) vinyl chloride containers is considered. This results in some level of combustion/explosion. Based on reports from the shipper, the estimated total load is approximately 3.5 cars' worth.
- Modeling is provided in the event of a deliberate breach of the container.
- A BLEVE is possible as a result of, or during, the breach – thus, blast effects are provided. **This analysis does not make recommendations on how to conduct this breach.**
- Quantity per railcar: 178,000 lb ~ 81,000 kg

(b)(3)10USC130

~~CUI~~

3



Caveats

- The partitioning of the various chemicals is not fully known. We have made the best estimates based on available literature and stoichiometry.
- As with the partitioning, estimates of the buoyancy induced by the fire and a possible explosion may not be accounted for accurately.
- There may be synergistic toxicological effects from exposure to multiple chemicals. Our modeling cannot account for this.
- Due to evacuations and responding personnel on the scene, population estimates may not reflect actual population distribution around the incident.

6:00 AM Breach (1100Z)
07 FEB 2023



—CUI—

RFI 22-0081iU

Hydrogen Chloride – 0600 Local



—CUI—

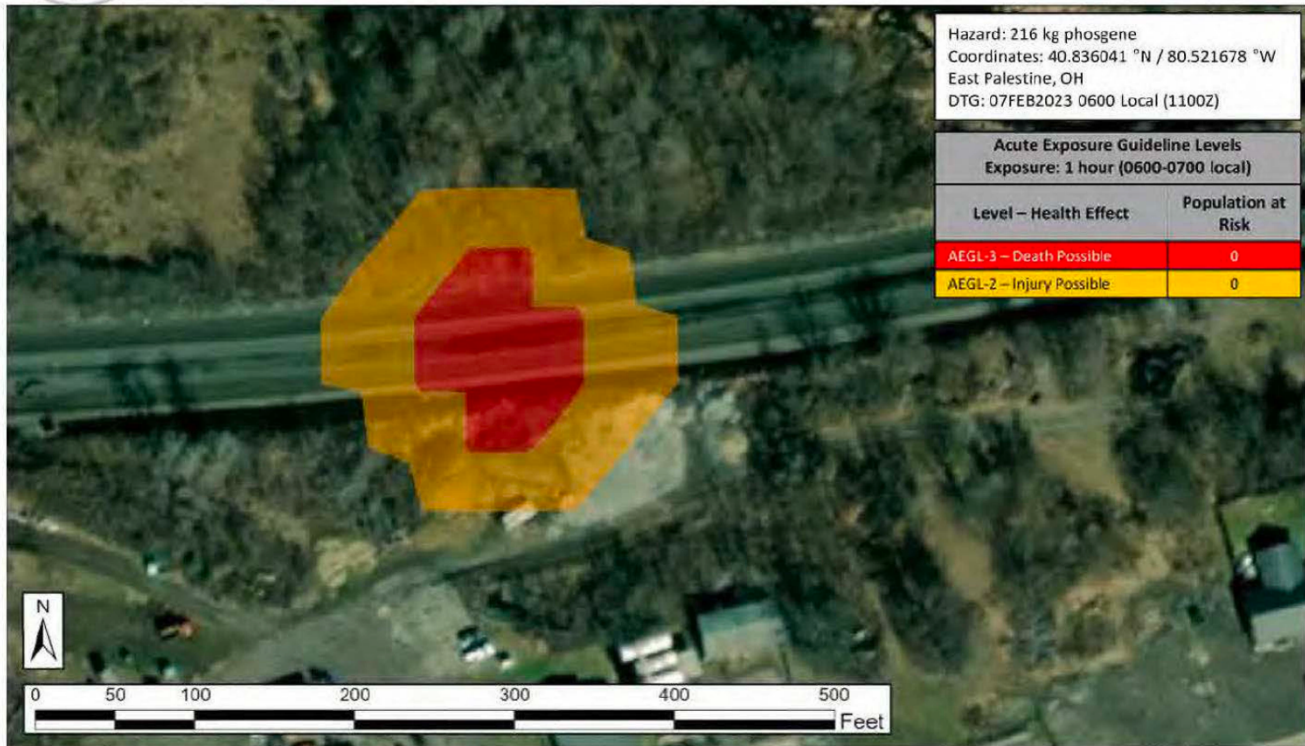
6



—CUI—

RFI 22-0081iU

Phosgene – 0600 Local



—CUI—

7



—CU—

RFI 22-0081iU

Vinyl Chloride – 0600 Local



—CU—

8

12:00 PM Breach (1700Z)
07 FEB 2023



—CUI—

RFI 22-0081iU

Hydrogen Chloride – 1200 Local



—CUI—

10



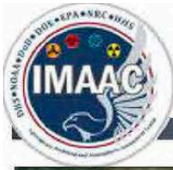
—CUI—

RFI 22-0081iU

Phosgene – 1200 Local



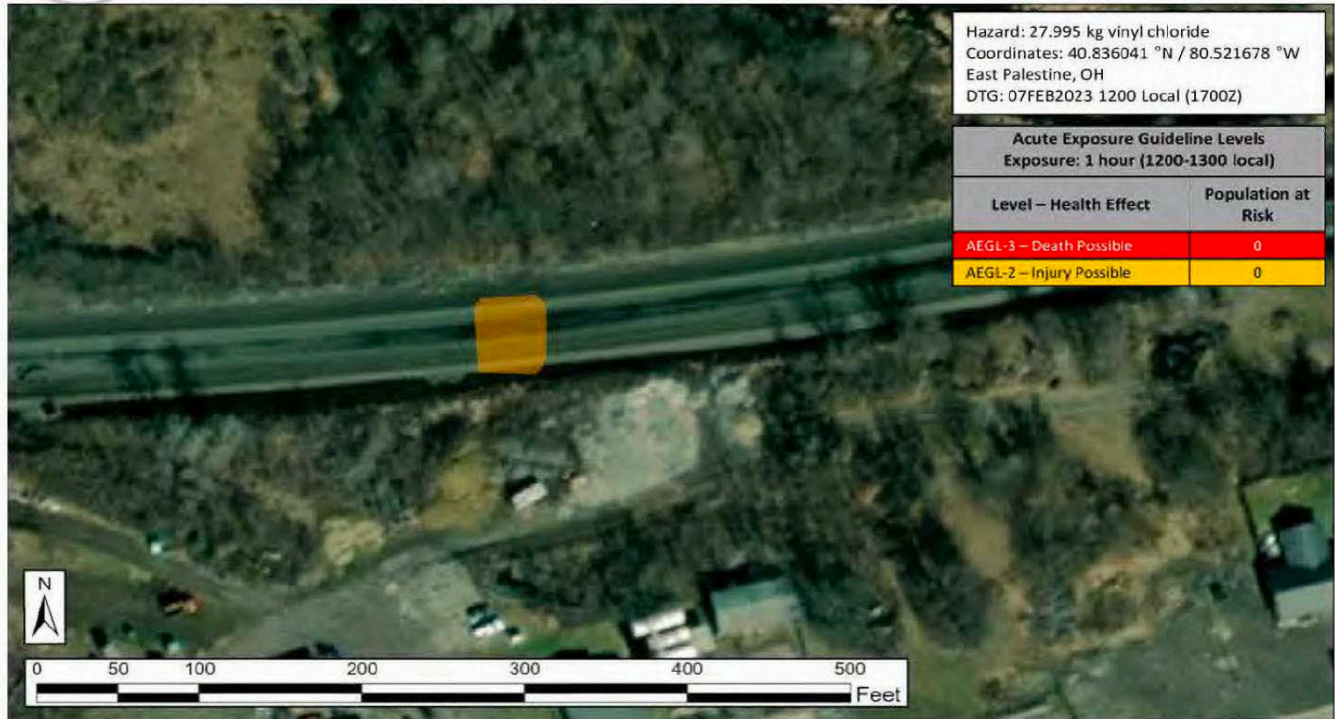
—CUI—



— CUI —

RFI 22-0081IU

Vinyl Chloride – 1200 Local



— CUI —

12



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

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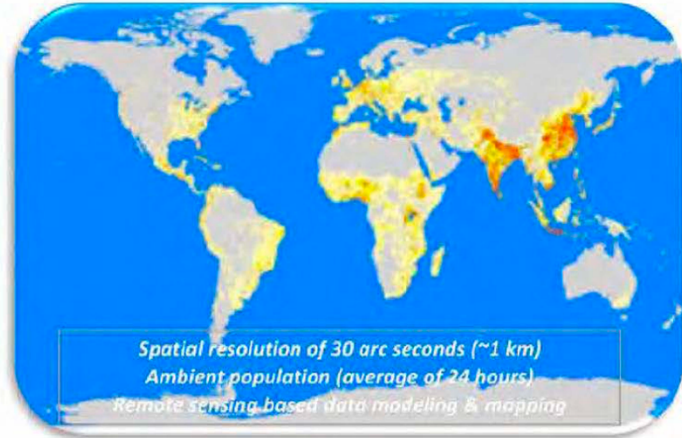
AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



Population Data

- Population figures are based on LandScan™, a database produced by Oak Ridge National Laboratory.
- LandScan™ is based on the 2010 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data. It was updated in 2020 and refreshed annually.
- Reported population numbers are **based upon average day and night** time LandScan™ 2021 data.*



- This population data does not include major shifts in personnel such as relocations, special events, etc. In such cases the population database needs to be amended or population can be added or removed within HPAC.
- For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas.
- More information is available at <https://landscan.ornl.gov>.

*Individual day or individual night data is available upon request for US and specialized OCONUS locations.

EXHIBIT 11

Mar. 8, 2023, Initial Product RFI 23-0081kU IMAAC



Request Summary

Requestor	(b) (6), Chemist, Tech. Advisor/ QAC, US EPA-R5-LSASD-SQAB
Contact information	(b) (6) (b) (6)
Request	After-action analysis of the afterburn of the train derailment in East Palestine, OH.
Employment	Real World
Hazards	• Soot from the combustion of several chemicals including: • Vinyl Chloride (887,400 lb) • Ethylene Glycol (185,150 lb) • Ethyl Hexyl Acrylate (205,900 lb) • Butyl Acrylate (180,000 lb)
Location	East Palestine, OH 40.8360921°N 80.5215888°W
Weather	High Resolution Numerical Weather Prediction: 12 km NAM from NCEP (CONUS)
Incident Date & Time	06FEB2023 1500 Local
Executive Summary	• A reanalysis of the train derailment and fire was performed with emphasis on tracing downwind locations where chemical deposits may exist. Contours of 10% of the AEGL-1 hazard level are provided for hydrogen chloride. 10% and 1% of the “unhealthy” dose of soot contour are provided as well.



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RFI 23-0081kU

Analysis Caveats

- This analysis is based on best estimates of the situation at the time of and during the controlled burn at East Palestine, OH. However, there are numerous unknowns and inherent uncertainty in models and model results that must be recognized.
- **This model does not claim to be the “ground truth” of what happened at the site.**
- Please see the following slides for caveats.

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Modeling Results Summary

- Modeling did not show widespread areas affected at a level that would suggest serious health consequences, but possibly local effects due to:
 - Atmospheric variability
 - Synergistic effects from multiple chemicals
 - Individual sensitivity to certain chemicals
- The plume likely moved to the SE from the site over the first two - three hours. After this, a wind shift drove the plume back in the opposite direction (to the NNW), over the East Palestine area. A sinking nighttime atmospheric boundary layer kept material closer to the ground.
- As a result of this shift, deposition occurred first to the SE and in the vicinity of the burn location, then to N and NW of the burn location after about 4 – 5 hours.



Caveats (1): Vinyl Chloride Burn

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

- Products of combustion assumed to be burning at near stoichiometric conditions (i.e. close to the optimal amount of air for ideal combustion). Analysis assumes a constant mass burn rate based on a hydrocarbon-like pool fire.
- No downwind hazard at the AEGL-1 level was estimated for unburned vinyl chloride or phosgene



Caveats (2): Other Chemicals

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

- Products of combustion assumed to be burning at near stoichiometric conditions (i.e. close to the optimal amount of air for ideal combustion). Analysis assumes a constant mass burn rate based on a hydrocarbon-like pool fire.
- Chemicals can have synergistic human effects (i.e., harmless doses of multiple chemicals can result in harm). **This model does not have any ability to model synergistic effects from what was certainly a multi-chemical mixture. We are not currently aware of any synergistic effects from this particular mix of chemicals.**



Caveats (3): General Caveats

- (b)(3)10USC130 [REDACTED]
 - † [REDACTED]
 - † [REDACTED]
- [REDACTED]
- Model results are inherently uncertain (even assuming perfect knowledge of the initial conditions, which we do not have) due to atmospheric variability, e.g., meander, intermittency, turbulence, etc. **This means that certain areas will have either higher or lower concentrations than indicated by the modeling.**
- Because of the nonlinear dynamics of fire plume spread, assumptions about the nature of the fire can have a huge effect on the results, including the size, intensity (the rate at which material is burning), and temperature. These factors introduce significant uncertainty into the analysis.
- Weather used the NOAA (National Oceanic and Atmospheric Administration) High Resolution Numerical North American Model (12 km NAM). These are broadly consistent with observations at the Pittsburgh International Airport, though that location is relatively far away (approx. 40 miles).
 - Forecast weather covers multiple locations and times across the modeling area rather than observations at one or a few locations. This should allow for greater accuracy across large regions.



Notes

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RFI 23-0081kU

- AEGL hazards and hazardous soot dosage are displayed over an 8 hr duration
- Soot deposition over the course of the ten hours of the model run (6 hours of burning plus four hours of transport after burning).
- The soot transmittance and vertical plume are displayed at 6 hrs to match the duration of the fire
 - Soot dissipates rapidly after the end of the combustion duration

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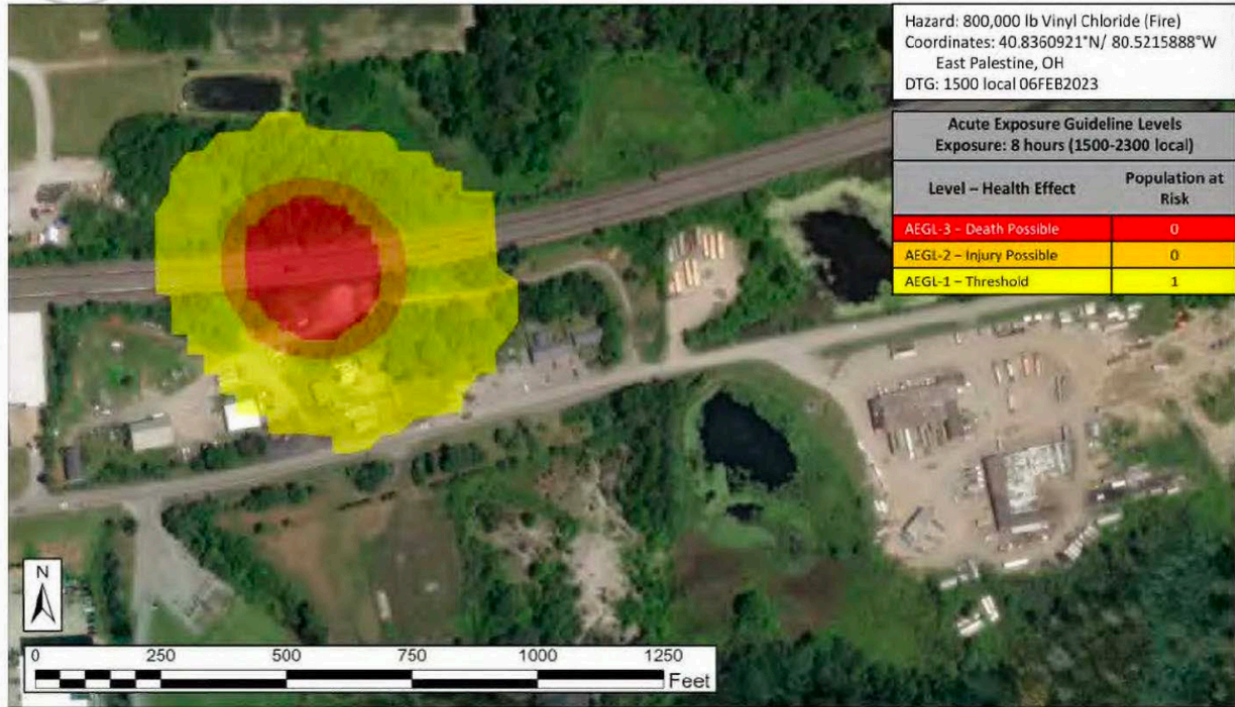
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RFI 23-0081kU

Hydrogen Chloride – East Palestine – 2300 local



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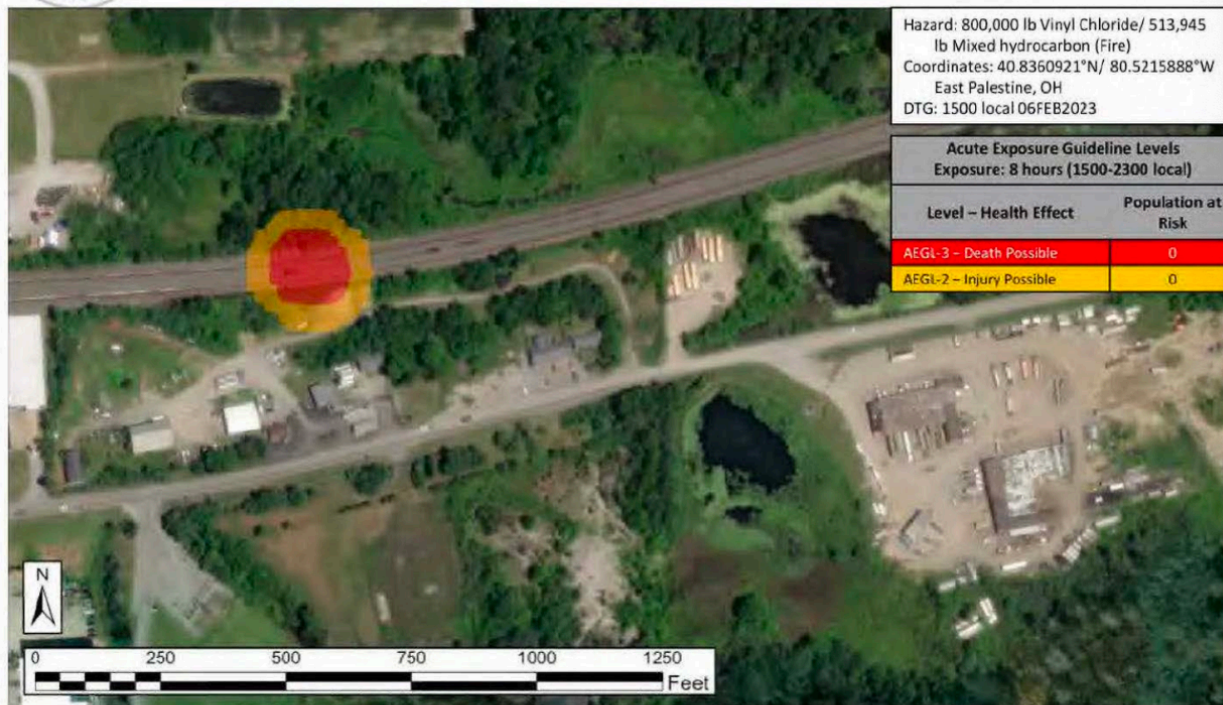
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RFI 23-0081kU

Carbon Monoxide— East Palestine – 2300 local



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10



Acute Exposure Guideline Levels (AEGL)

Value	Description
AEGL-3	Death Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.
AEGL-2	Injury Possible - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
AEGL-1 (May not be displayed or defined)	Threshold - the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic nonsensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.

FINAL AEGLs – may be used on a permanent basis by all federal, state and local agencies, and private organizations.

INTERIM AEGLs – represents the best efforts of the AEGL Committee to establish exposure limits, and the values are available for use as deemed appropriate on an interim basis by federal and state regulatory agencies and the private sector.

AEGLs are developed by the EPA and represent threshold exposure limits for the general public and are applicable to emergency exposure periods ranging from 10 minutes to 8 hours. These levels are applicable to the general population including infants and children, and other susceptible individuals.

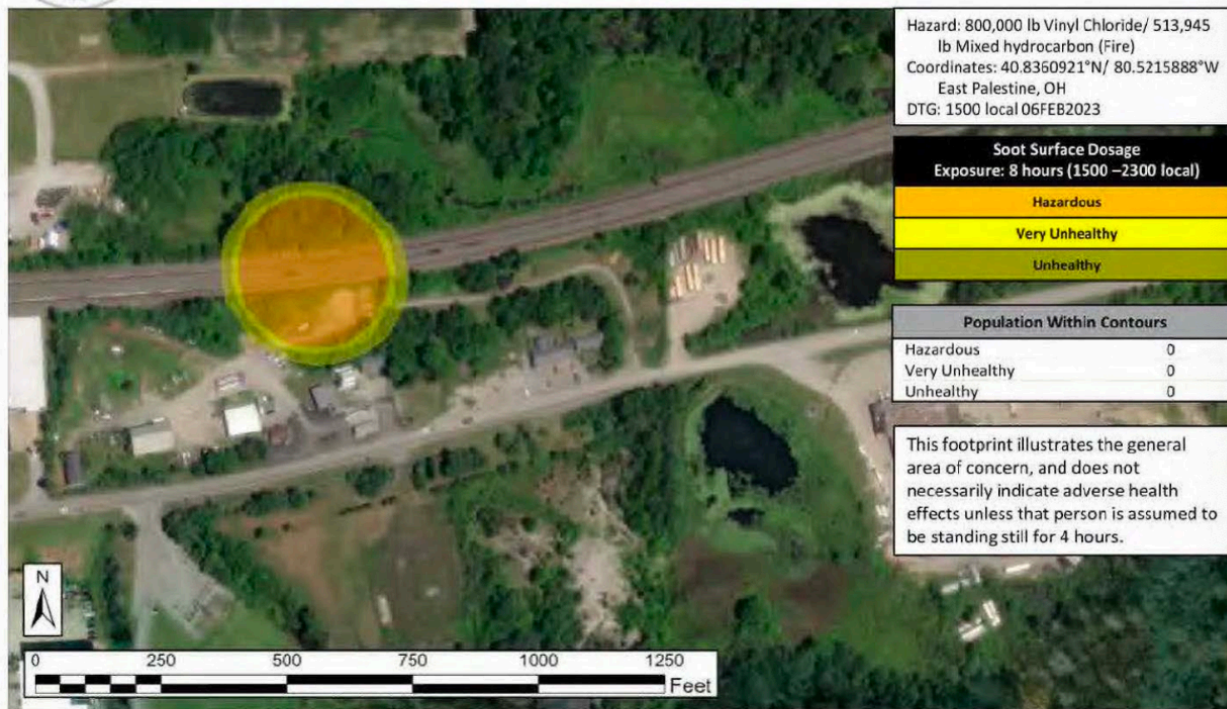
Published AEGL times are 10 min, 30 min, 1 hr, 4 hr and 8 hr. Using these published guidelines, DTRA developed HPAC to plot human effects in a time weighted manner that better estimates the AEGL effects. These effects use extrapolations for very short time exposures.



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RFI 23-0081kU

Soot – Surface Dosage – 2300 local



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Soot – Surface Dosage

Value	Description
Hazardous	Serious aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; serious risk of respiratory effects in general population. Everyone should avoid all physical activity
Very Unhealthy	Significant aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; significant increase in respiratory effects in general population. People with heart or lung disease, older adults, and children should avoid all physical activity outdoors; everyone else should avoid prolonged or heavy exertion.
Unhealthy	Increased aggravation of heart or lung disease and premature mortality in people with cardiopulmonary disease and older adults; increased respiratory effects in general population. People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion; everyone else should reduce prolonged or heavy exertion.

Cumulative dosage values based on exposure to 2.5µm particulate matter. Concentration values and descriptions taken from Pollutant-Specific Sub-indices and Health Effects Statements and Cautionary Statements for Guidance on the Air Quality Index tables, in Guidelines for Reporting of Daily Air Quality – Air Quality Index (AQI), USEPA, EPA-454/B-06-001, May 2006.



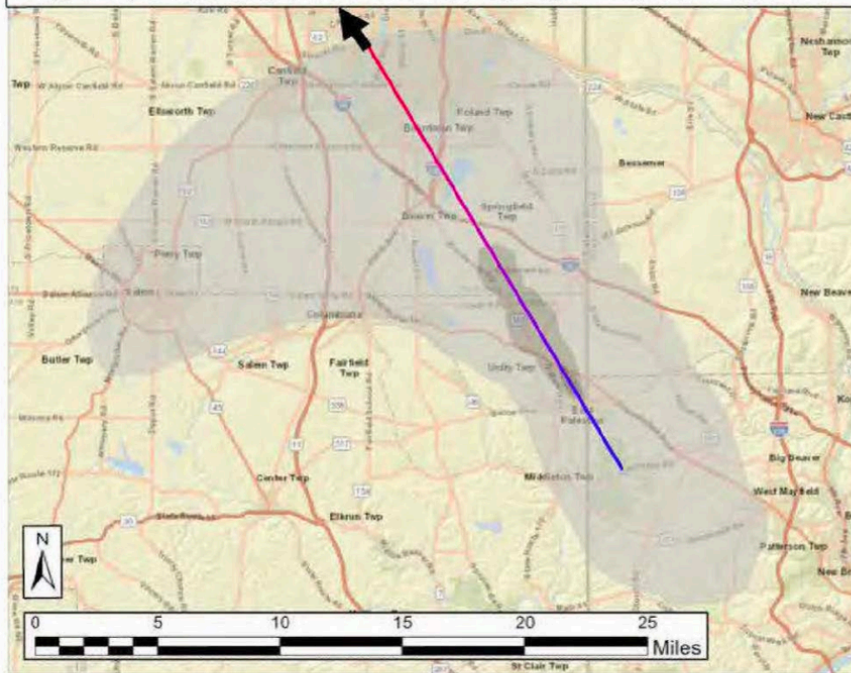
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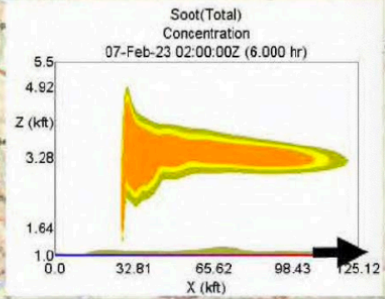
Soot – Vertical Profile – 2100 local

Gray plume represents a bird's eye view of the smoke cloud. Note: image is an snapshot, not a cumulative effect.

Hazard: 800,000 lb Vinyl Chloride/ 513,945
lb Mixed hydrocarbon (Fire)
Coordinates: 40.8360921°N/ 80.5215888°W
East Palestine, OH
DTG: 1500 local 06FEB2023



Soot Concentration @ 2100Z	
Hazardous	
Very Unhealthy	
Unhealthy	
Light Transmittance	
10%	
50%	
90%	



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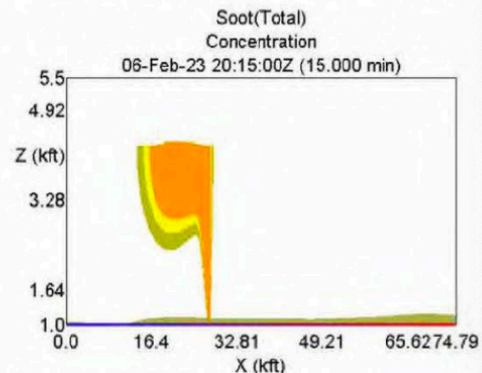
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RFI 23-0081kU

Plume Height

- Reports¹ suggested the initial plume rose to a height of about 3,000 ft, and was the focus of multiple pictures both from the air and ground. Modeling results shown here depict a vertical cross-section of the soot plume at 15 min after the start of the burn, shown in feet above sea level.
- Modeled plume height is approximately 2500 - 4300 ft above ground level and therefore seems broadly consistent with reported plume heights. This provides some confidence that we are capturing the overall dynamics of the fire, with the caveat that neither the observed nor modeled heights are highly precise.

Soot concentration looking approx. SE from the burn location at 15 min after fire start



1. <https://myfox8.com/weather/blog/how-an-inversion-layer-trapped-a-plume-of-toxic-chemicals-near-surface-in-ohio/>

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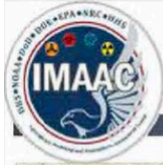
RFI 23-0081kU

Soot Deposition

- Total soot deposition is plotted to demonstrate areas where soot is most likely to have settled. It does not imply any specific health effects, it should only be used as a guide for where soot is likely to have settled on the ground.
- Caveat: The settling rate of soot is highly dependent on its particle size. We do not have good information on the particle size distribution of this particular fire. Smaller or larger particles could settle in different patterns than indicated by this analysis.

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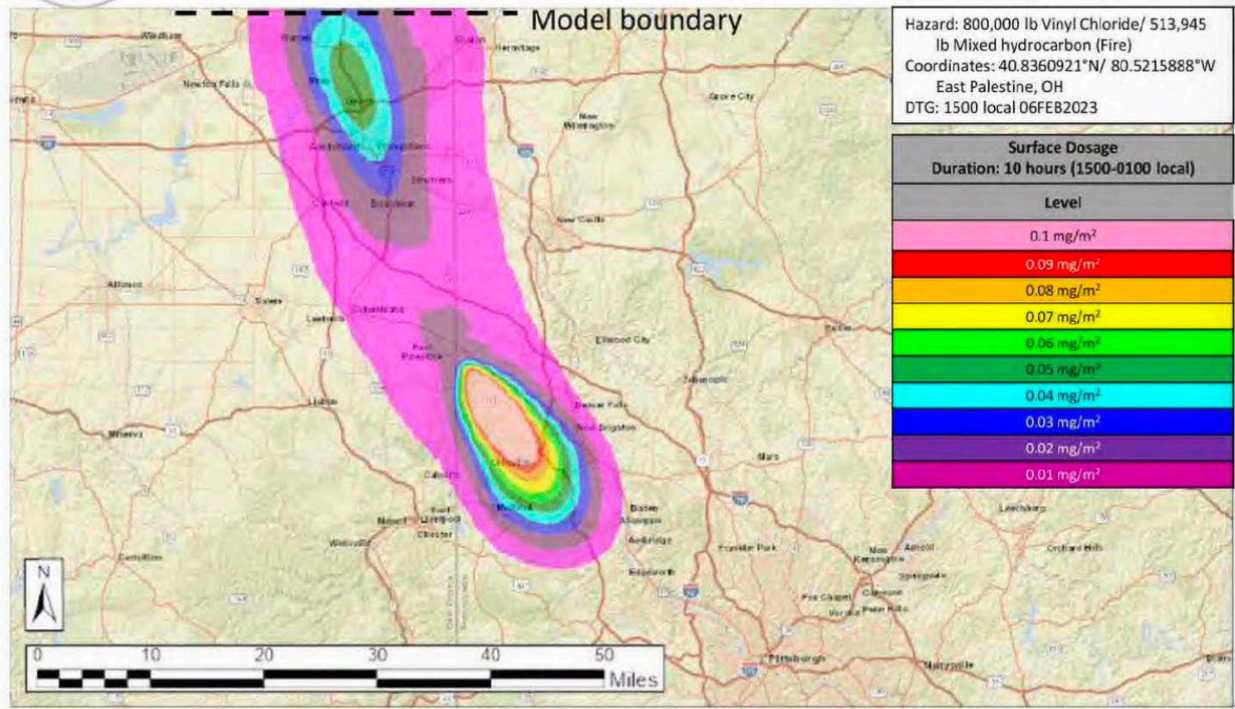
16



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RFI 23-0081KU

Soot Surface Deposition over 10 hours (1500 – 0100)



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RFI 23-0081kU

HCl Surface Dosage Plots

- Of the human effects, the HCl effects were by far the highest (again, see the caveats about synergistic effects and assumptions about chemical amounts).
- HCl has acute exposure guideline levels (AEGLs) prescribed, based on an airborne concentration level integrated over time (i.e., a dosage). The lowest level, AEGL-1, indicates threshold effects, which could be discomfort or irritation, but not life-threatening effects. The lowest AEGL-1 threshold is the 8 hour exposure, a dosage of about 27 mg*min/m³.
 - The above dosage at ground level is plotted for multiple time points after the initiation of the controlled burn. This dosage level was only exceeded in the immediate proximity of the fire.
- **A level one-tenth of the lowest AEGL-1 is also plotted. People in this contour have an extremely low probability of effect, but may be affected due to:**
 - Particular sensitivity to the chemical(s)
 - Atmospheric or plume variability resulting in a much higher than average dose at that location
 - The synergistic effects of multiple chemicals may mean that a lower dosage threshold can result in effects.

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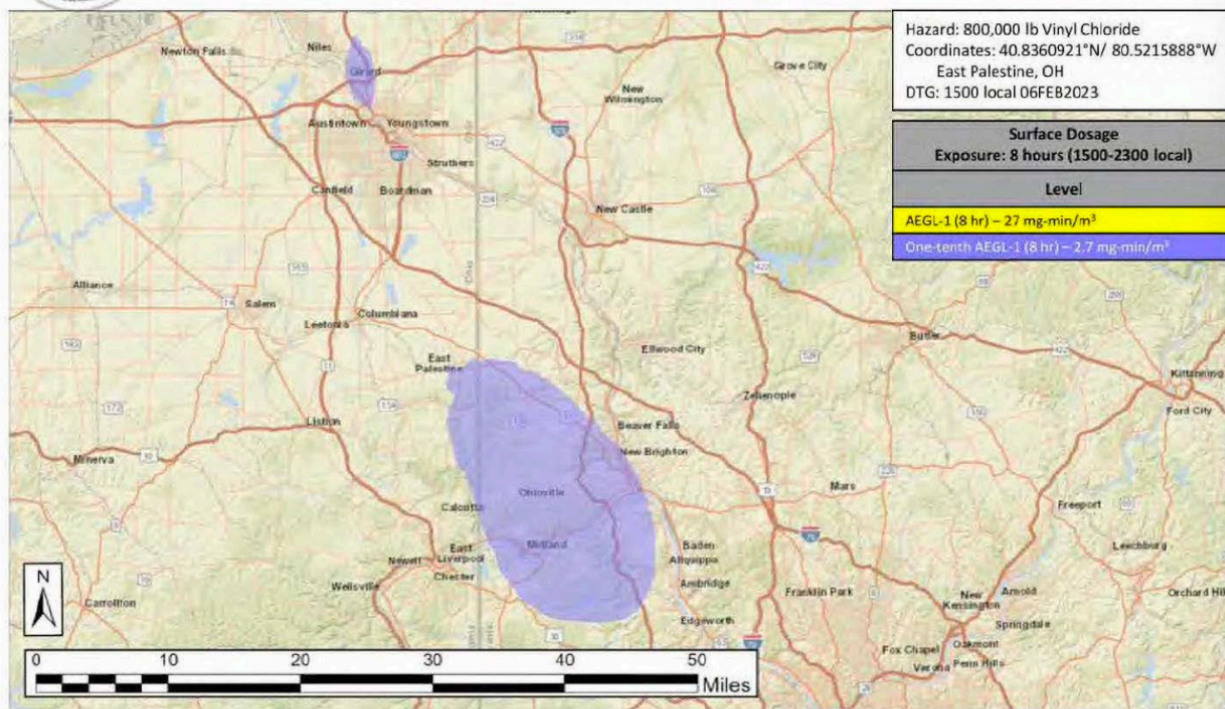
18



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RFI 23-0081kU

Hydrogen Chloride – Surface Deposition– 2300 local (Far View)



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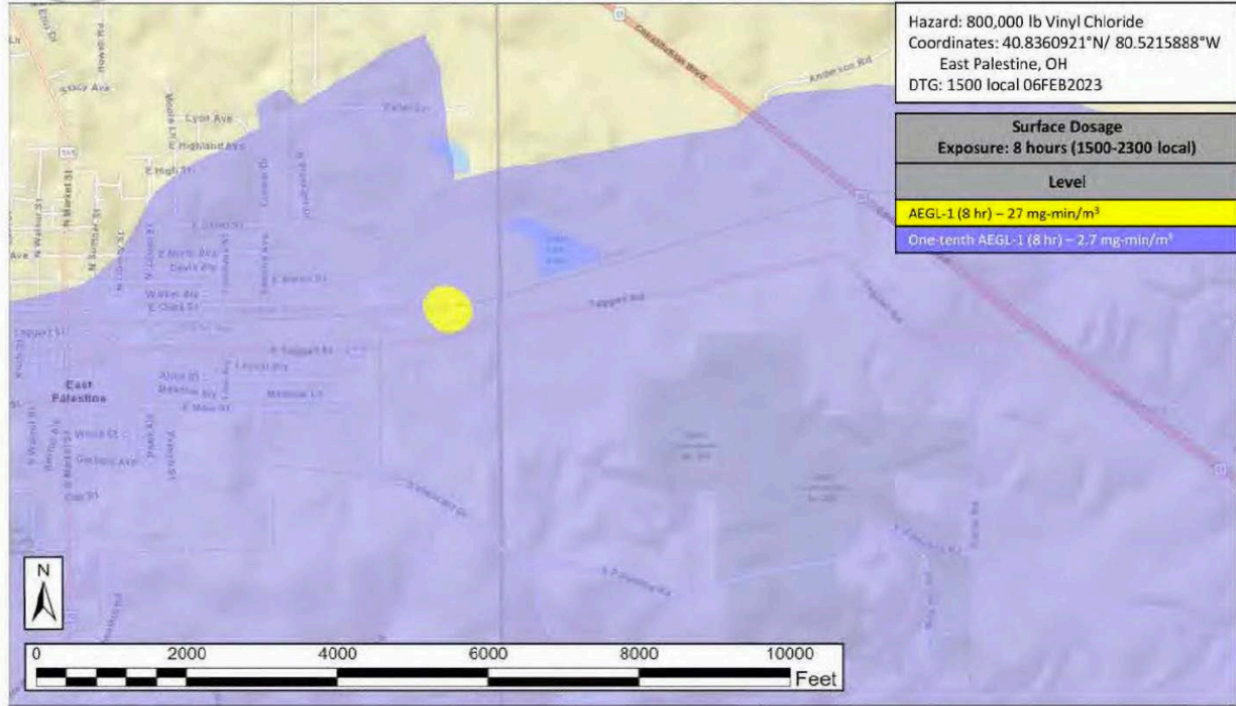
19



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RFI 23-0081kU

Hydrogen Chloride – Surface Deposition– 2300 local (Near View)

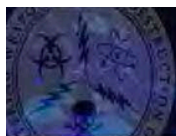


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EXHIBIT 12

Mar. 9, 2024, CWMD Open Source Report



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CWMD Open Source Report

09 March 2024



Homeland
Security

RADIOLOGICAL/NUCLEAR:

- (08 March 2024 Reuters) [Ukraine] **Safety at Zaporizhzhia nuclear plant worsening, Ukraine says:** Safety at the Russian-held Zaporizhzhia nuclear power plant (ZNPP) in Ukraine is worsening daily, Ukraine's energy minister said on Friday, pledging to keep pressuring Russia at the U.N. nuclear watchdog to withdraw from the site. The International Atomic Energy Agency's 35-nation Board of Governors passed a resolution late on Thursday condemning Russia's occupation of Europe's biggest nuclear power plant and expressing "grave concern" at lack of staffing and maintenance two years after its capture. The IAEA, which has a small presence at the plant, says the situation at Zaporizhzhia remains precarious. The plant has lost all external power eight times in the last 18 months, forcing it to rely on diesel generators to cool the fuel in its reactors and avoid a potentially catastrophic meltdown. <https://www.msn.com/en-us/news/world/safety-at-zaporizhzhia-nuclear-plant-worsening-ukraine-says/ar-BB1jz8He>
- (08 March 2024 Newsweek) [Russia] **Putin Ally Suggests Nuclear Strikes on 3 NATO Members:** An ally of Russian President Vladimir Putin has suggested launching nuclear strikes on three members of the NATO military alliance—France, Germany and the United States. State TV host Vladimir Solovyov, one of the most-prominent figures in Kremlin-backed media, floated the idea on his show Evening with Vladimir Solovyov. The Daily Beast's Julia Davis shared an excerpt of the broadcast on Friday on X, formerly Twitter. Newsweek has contacted Russia's Foreign Ministry for comment by email. The idea that a nuclear war could break out amid the conflict in Ukraine has been floated by numerous Russian officials, including Dmitry Medvedev, Russia's former president and prime minister. <https://www.msn.com/en-us/news/world/putin-ally-suggests-nuclear-strikes-on-3-nato-members/ar-BB1jxWAY>

CHEMICAL:

- (08 March 2024 Reading Eagle) [Pennsylvania] **Fire contained at southeastern Berks chemical plant Arkema Inc:** Emergency crews rushed to the scene of a fire at a chemical factory in Exeter Township Thursday evening. Crews were dispatched shortly after 7 p.m. for reports of a machine on fire at the Arkema Inc. facility, 1112 Lincoln Road. Firefighters ran multiple lines to extinguish the flames. Arkema is an international chemical and material producer with over 40 facilities in the U.S., according to the company's website. The company has several other sites in southeastern Pennsylvania. <https://www.msn.com/en-us/news/other/fire-contained-at-southeastern-berks-chemical-plant-arkema-inc/ar-BB1jx0xV>
- (07 March 2024 The Associated Press) [Ohio] **After Ohio train derailment, tank cars didn't need to be blown open to release chemical, NTSB says:** The decision to blow open five tank cars and burn the toxic chemical inside them after a freight train derailed in Eastern Ohio last year wasn't justified, the head of the National Transportation Safety Board told Congress Wednesday. But she said the key decision-makers who feared those tank cars were going to explode three days after the crash never had the information they needed. The vinyl chloride released that day, combined with all the other chemicals that spilled and caught fire after the derailment in East Palestine, Ohio, have left residents with lingering fears about possible long-term health consequences. Experts from the company that made the vinyl chloride inside those

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tank cars, Oxy Vinyls, were telling contractors hired by Norfolk Southern railroad that they believed that no dangerous chemical reaction was happening, NTSB Chair Jennifer Homendy said. But Oxy Vinyls was left out of the command center. <https://www.msn.com/en-us/news/us/after-ohio-train-derailment-tank-cars-didnt-need-to-be-blown-open-to-release-chemical-ntsb-says/ar-BB1js8vv>

BIOLOGICAL:

- (08 March 2024 UPI) [Global] **Cheese company Sargento distances itself from listeria outbreak:** Wisconsin-based cheese company Sargento Foods said its products were safe and not included in a February recall that implicated one of their former partners, Rizo-Lopez Foods, Inc. In a statement Thursday, Sargento said it investigated its products in early February and determined that the recall impacted a limited amount of its food service and ingredients products, but did not impact Sargento-branded products. https://www.upi.com/Top_News/US/2024/03/08/sargento-cheese-not-included-recall/2161709905138/
- (08 March 2024 Food Poisoning Bulletin) [New Jersey] **Mussels from Allen's Fisheries associated with outbreak in NJ:** FDA has issued a warning about certain mussels from Allen's Fisheries in Benoit's Cove, Newfoundland, Canada, that are associated with an outbreak in New Jersey. The pathogen or biotoxin that allegedly caused this outbreak has not been named, and the number of patients, their ages, illness onset dates, and whether or not anyone has been hospitalized was not mentioned in the alert. <https://foodpoisoningbulletin.com/2024/mussels-from-allens-fisheries-associated-with-outbreak-in-nj/>

MEDICAL:

- (08 March 2024 Live Science) [U.S.] **'Parrot fever' outbreak in 5 European countries kills 5 people:** An outbreak of a respiratory infection that most often affects birds has killed five people in Europe, the World Health Organization (WHO) warns. During 2023 and the start of 2024, Austria, Denmark, Germany, Sweden and the Netherlands have reported an "unusual and unexpected increase" in cases of so-called parrot fever, beyond what's been seen in previous years, the WHO said in a statement Tuesday (March 5). In all, the illness has affected almost 90 people, with five deaths reported among them. <https://www.livescience.com/health/viruses-infections-disease/parrot-fever-outbreak-in-5-european-countries-kills-5-people>
- (07 March 2024 The Associated Press) [Wisconsin] **Medical examiner says two Wisconsin inmates died of fentanyl overdose, stroke:** Two of the four inmates found dead at Waupun Correctional Institution since June died of a drug overdose and a stroke, a medical examiner said Wednesday. Tyshun Lemons, 30, was found dead at the prison on Oct. 2. Cameron Williams, 24, was found dead there on Oct. 30. Dodge County Medical Examiner PJ Schoebel said in a telephone interview that Lemons overdosed on acetyl fentanyl, a potent opioid painkiller. He declined to comment on how Lemons obtained the fentanyl. <https://www.msn.com/en-us/news/crime/medical-examiner-says-two-wisconsin-inmates-died-of-fentanyl-overdose-stroke/ar-BB1jrFMe>

TERRORISM:

- (08 March 2024 ABC) [Yemen] **Suspected attack by Yemen's Houthi rebels sets off explosions ahead of a ship in the Gulf of Aden:** A suspected attack by Yemen's Houthi rebels on Friday set off explosions ahead of a vessel in the Gulf of Aden, authorities said. Friday's explosions came after a Houthi missile struck a commercial ship in the Gulf of Aden on Wednesday, killing three of its crew members and forcing survivors to abandon the vessel. It was the first fatal strike in a campaign of assaults by the Iranian-backed group over Israel's war on Hamas in the Gaza Strip. The Houthis describe the attacks as trying to pressure Israel into stopping the war, but their targets increasingly have little or nothing to do with the conflict. <https://abcnews.go.com/International/wireStory/suspected-attack-yemens-houthi-rebels-sets-off-explosions-107924023>
- (08 March 2024 The Associated Press) [Germany] **Germany's top prosecutor takes over Tesla fire investigation, suspecting terrorism:** Germany's top prosecutor has taken over the investigation into an alleged arson attack on the power supply of the electric car company Tesla near Berlin. A spokeswoman said there is an initial suspicion that a terrorist organization may have been involved in the attack. In such cases, the federal prosecutor's office, the top law enforcement agency in Germany, is responsible for the investigation. On Tuesday, production at Tesla's electric vehicle plant in Gruenheide came to a standstill and workers were evacuated after a power outage that officials suspected was caused by arson. <https://www.msn.com/en-us/news/other/germanys-top-prosecutor-takes-over-tesla-fire-investigation-suspecting-terrorism/ar-BB1jyyvk>

OTHER TOPICS (Leadership Directed):

- (08 March 2024 Breaking Defense) [U.K.] **UK pledges additional 10,000 FPV and one way attack drones for Ukraine:** The UK will supply Ukraine with an additional 10,000 drones under a new \$159 million military aid package announced by British Defense Secretary Grant Shapps during a visit to Kyiv. Most of the unmanned aerial vehicles (UAV) set for delivery are First Person View (FPV) platforms, though a number of one way attack, surveillance and maritime drones will also be provided. The latest pledge is in addition to the \$255 million drone package announced by London in January and February's move to co-lead an international drone coalition for Ukraine with Latvia. The European coalition is targeting production and delivery of 1 million drones to the war-torn country. "Britain steps up support to Ukraine today with a complete package of \$414 million for cutting-edge drones to help fight Putin's illegal invasion," the UK Ministry of Defense (MoD) said in a Thursday statement. <https://breakingdefense.com/2024/03/uk-pledges-additional-10000-fpv-and-one-way-attack-drones-for-ukraine/>

V/r,

CWMD Watch Desk Officer

Current Operations and Integration
 Operations Support Directorate
 Countering Weapons of Mass Destruction
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 CWMD Desk: (202) 282-9262 (primary)

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CWMDWatchDesk@hq.dhs.gov

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