

DCA13MR002
Conrail - Shared Assets
Derailment/Hazardous Material Release
Paulsboro, New Jersey
November 30, 2012

Hazardous Materials
Group Factual Report

ATTACHMENT 25 – IMAAC
DISPERSION MODELING



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IMAAC

**Interagency Modeling and
Atmospheric Assessment Center**

REAL WORLD

Train Derailment Containing Vinyl Chloride in Paulsboro, NJ

30NOV2012 1417Z

RFI – 1129U

30NOV2012

Requestor: Philip Quach, NOC

Distribution authorized to U.S. Government agencies and their contractors for administrative/operational use.

Date: 30NOV2012

Other requests for this document shall be referred to:

Defense Threat Reduction Agency
8725 John J. Kingman Rd, MS 6201
Fort Belvoir, VA 22060-6201

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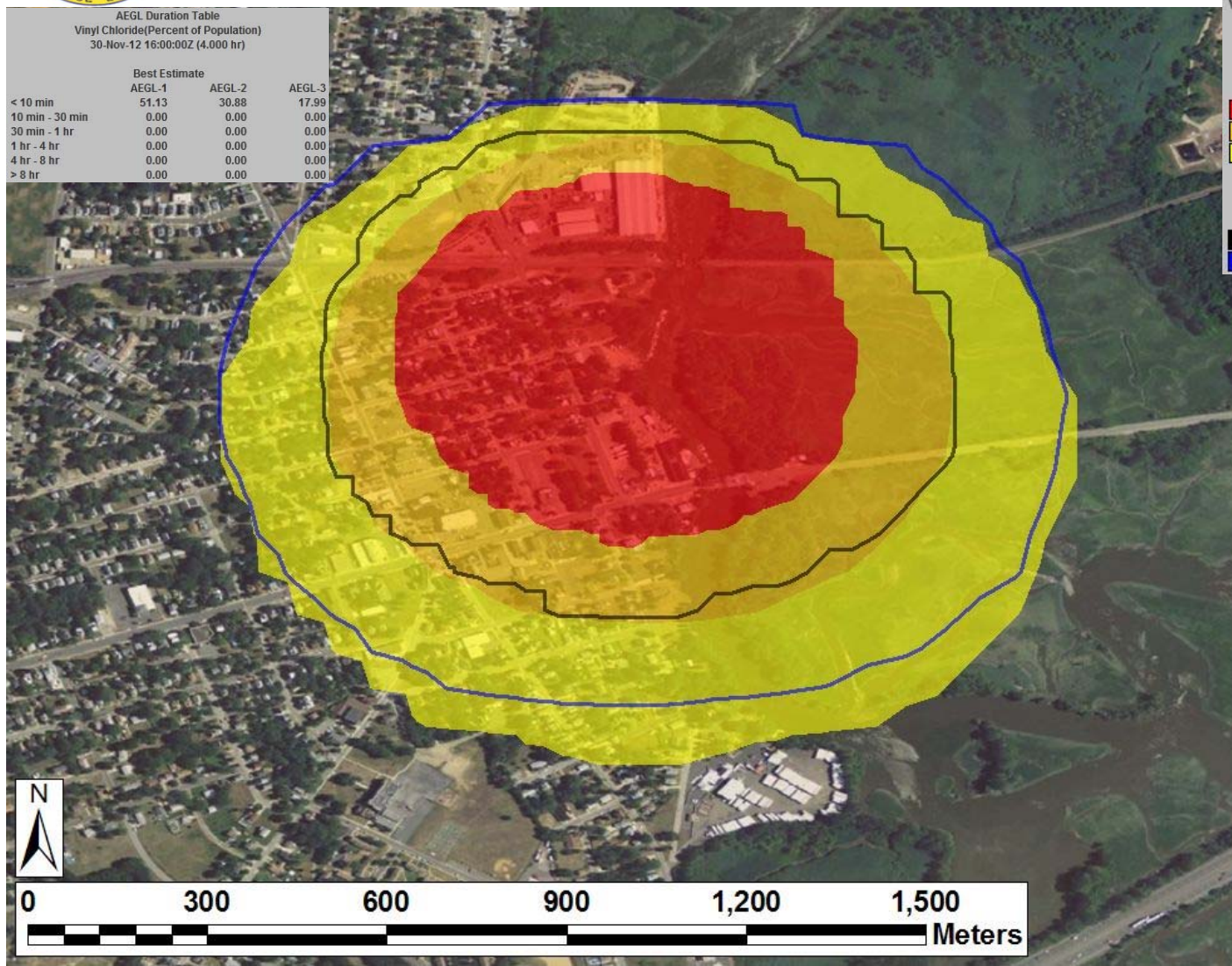


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Vinyl Chloride – Initial Response

AEGL Duration Table
Vinyl Chloride(Percent of Population)
30-Nov-12 16:00:00Z (4.000 hr)

	Best Estimate		
	AEGL-1	AEGL-2	AEGL-3
< 10 min	51.13	30.88	17.99
10 min - 30 min	0.00	0.00	0.00
30 min - 1 hr	0.00	0.00	0.00
1 hr - 4 hr	0.00	0.00	0.00
4 hr - 8 hr	0.00	0.00	0.00
> 8 hr	0.00	0.00	0.00



Vinyl chloride : Acute Exposure Guideline Levels (INTERIM)
30-Nov-12 16:00:00Z (4.000 hr)
"Best Estimate" - Mean Contours

	Value	In contour population
Death Possible	3.0	293
Injury Possible	2.0	538
Threshold	1.0	992
Worst Case (w/meander)		
	Value	In contour population
10% Death Possible	3.0	535
10% Injury Possible	2.0	913

This quick response used a weather prediction model; and was not coordinated with other IMAAC participants. Coordination will follow, and product will be updated as needed.

FACTS

Paulsboro, NJ
 Location: 39.834044° N / 75.237884° W
 Event Time: 1200Z (0700 Local)
 30NOV2012
 Amount: Vinyl Chloride
 Dissemination: Train derailment/Leak
 Weather: 12 km NAM
 Model: HPAC 5.1
 Static Population Estimates:
 LandScan 2011



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Acute Exposure Guideline Levels (AEGLs) – INTERIM

Death Possible (AEGL-3): The concentration in air of a substance at or above which it is predicted that the general population could experience life-threatening health effects or death.

Injury Possible (AEGL-2): The concentration in air of a substance at or above which it is predicted that the general population could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.

Threshold (AEGL-1): The concentration in air of a substance at or above which it is predicted that the general population could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are reversible upon cessation of exposure.

Acute Exposure Guideline Levels (INTERIM) "Best Estimate" - Mean Contours		
	Value	In contour population
Death Possible	3.0	Values Vary
Injury Possible	2.0	
Threshold	1.0	
Worst Case (w/wx uncertainty)		
	Value	In contour population
10% Death Possible	3.0	Values Vary
10% Injury Possible	2.0	

90% confidence level that an AEGL-3 or AEGL-2 outcome is possible, based on atmospheric effects and weather uncertainty.

EPA: "Acute* Exposure Guideline Levels (AEGLs), are intended to describe the risk to humans resulting from once-in-a-lifetime, or rare, exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills, or other catastrophic exposures.

*Definition: Acute exposures are single, non-repetitive exposures for not more than 8 hrs"

INTERIM AEGL Values: *The interim AEGL status represents the best efforts of the NAC/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.*

Notes: In accordance with EPA guidelines, the published AEGL times are at 10 min, 30 min, 1 hr, 4 hr and 8 hr only. Using these published guidelines from the EPA, DTRA developed HPAC 5.0 to plot human effects in a time weighted manner that better estimates the AEGL effects. For exposure times below 10 min AEGL values are extrapolated based on existing data fit. For most releases very short times tend to dominate AEGL exposure and therefore extrapolated data are dominant. Numerical figures are based upon a population database (LandScan). LandScan is based on the 2000 census for the U.S. (other nations vary), overhead imagery, geo-economic, and other observable data and was updated in 2011. Population is assumed static for calculations. The population numbers next to associated hazard levels are the people contained within the entire contour based, **based upon average day and night** time LandScan 2011 data. **Also available are the average day or night** time LandScan 2011 data. For planning purposes, estimates are assumed to be accurate within +10/-5%. Validation testing indicates agreement within 20% for select examined areas. The population data will not predict major shifts in personnel such as relocations (i.e.: religious pilgrimages, refugees, evacuations), events (i.e.: inaugurations, Olympics), or other population shifts. In such cases the population database needs to be updated to reflect actual conditions.