

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

1. DMC 145 m3\_ 10 perces leürülés

1 Model: Liquid Release

version: v2024.04.a199aff (2024. 04. 26.)  
Reference: Yellow Book, CPR-14E, 3rd edition 1997, Paragraph 2.5.4

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Overpressure above liquid (assuming closed system) (bar)	0
Calculation Method	
Use which representative rate	First 20% average (flammable)
Type of vessel outflow	Vessel empty in specified time
Vessel emptying duration (s)	600
Process Dimensions	
Vessel volume (m3)	145
Filling degree (%)	95
Vessel type	Vertical cylinder
Height cylinder (m)	3,5
Hole rounding	Sharp edges
Environment	
Ambient pressure (bar)	1,0151
Results	
Source Definition	
Initial mass in vessel (kg)	1,4733E05
Total mass released (kg)	1,4733E05
Time needed to empty vessel (s)	1122
Hole diameter used (mm)	248,32
Maximum mass flow rate (kg/s)	259,35
Representative release rate (kg/s)	245,69
Representative outflow duration (s)	600
Representative pressure (bar)	1,3281

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Contour dimensions	
Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 26. 11:17:23
Last duration	0s 24ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

2. DMC 145 m3\_ 50 mm lyuk

2 Model: Liquid Release

version: v2024.04.a199aff (2024. 04. 26.)  
Reference: Yellow Book, CPR-14E, 3rd edition 1997, Paragraph 2.5.4

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Overpressure above liquid (assuming closed system) (bar)	0
Calculation Method	
Use which representative rate	First 20% average (flammable)
Type of vessel outflow	Release through hole in vessel
Type of release duration	Calculate until device is empty
Process Dimensions	
Vessel volume (m3)	145
Filling degree (%)	95
Vessel type	Vertical cylinder
Height cylinder (m)	3,5
Hole diameter (mm)	50
Hole rounding	Sharp edges
Height leak above tank bottom (m)	0
Environment	

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Ambient pressure (bar)	1,0151
Results	
Source Definition	
Initial mass in vessel (kg)	1,4733E05
Total mass released (kg)	1,4733E05
Time needed to empty vessel (s)	27766
Hole diameter used (mm)	50
Maximum mass flow rate (kg/s)	10,514
Representative release rate (kg/s)	10,448
Representative outflow duration (s)	1800
Representative pressure (bar)	1,3595
Contour dimensions	
Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 26. 11:18:47
Last duration	0s 21ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

3. DMC 145 m3\_ Tócsatűz

3 Model: Liquid LOC Scenario Instantaneous Release

version: v2024.04.9943f73 (2024. 04. 26.)  
Reference: EFFECTS User manual "Combined models"

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Calculation Method	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Outcome / phenomena</b>	<ul style="list-style-type: none"> <li>Pool fire</li> <li></li> </ul>
<b>Use which representative rate</b>	First 20% average (flammable)
<b>Evaporation from land or water</b>	Land
<b>Maximum evaluation time for evaporation (s)</b>	1800
<b>Type of pool fire calculation</b>	Two zone model Rew & Hulbert
<b>Fraction combustion heat radiated (-)</b>	0,35
<b>Soot definition</b>	Calculate/Default
<b>Use GAME overpressure method</b>	No
<b>Fraction cloud involved in explosion (-)</b>	0,08
<b>Curve number</b>	10 (Detonation)
<b>Process Dimensions</b>	
<b>Vessel volume (m3)</b>	145
<b>Filling degree (%)</b>	95
<b>Type of pool growth on Land</b>	Spreading in bunds
<b>Max. pool surface area (m2)</b>	380
<b>Type of pool shape (pool fire)</b>	Circular
<b>Height of the confined pool above ground level (m)</b>	0
<b>Include shielding at bottomside flame</b>	No
<b>Meteo Definition</b>	
<b>Meteorological data</b>	Pasquill
<b>Pasquill stability class</b>	F (Very Stable)
<b>Wind speed at 10 m height (m/s)</b>	2
<b>Predefined wind direction</b>	W
<b>Environment</b>	
<b>Ambient temperature (°C)</b>	20
<b>Ambient pressure (bar)</b>	1,0151
<b>Ambient relative humidity (%)</b>	83
<b>Temperature of the subsoil (°C)</b>	20
<b>Solar radiation flux</b>	User defined
<b>Solar heat radiation flux (W/m2)</b>	120
<b>Type of subsoil (evaporation)</b>	Average subsoil
<b>Subsurface roughness description on Land (pool)</b>	flat sandy soil, concrete, tiles, plant-yard
<b>Amount of CO2 in atmosphere (-)</b>	0,0003
<b>Roughness length description</b>	High crops; scattered large objects, $15 < x/h < 20$ .
<b>Vulnerability</b>	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Pressure lethality based on	Threshold pressure level
Peak pressure total destruction (Indoors+Outdoors) (mbar)	300
Lethality total destruction (Indoors+Outdoors) (-)	1
Peak pressure indoors (glass) lethality (mbar)	100
Lethality indoors (glass) (-)	0,025
Toxic exposure duration based on	Time limit until sheltering
Start of exposure (after moment of release) (s)	0
Max. duration until sheltering (s)	1800
Perform toxic indoors calculation	No
<b>Accuracy</b>	
Grid resolution	Low
<b>Reporting</b>	
Reporting/receiver distance (Xd) (m)	500
Reporting/receiver height (Zd) (m)	1,5
Ignition time flammable cloud	Time maximum area cloud
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	No
Show dynamic concentration grid	No
Use defined dose contour	No
<b>Results</b>	
<b>Source Definition</b>	
Rainout mass (as liquid) (kg)	1,4733E05
Temperature of the pool (°C)	20
<b>Fire Results</b>	
Equivalent diameter of fire (m)	21,996
Max. diameter top flame (m)	25,058
Flame footprint dimensions D,-D,DMW,MW	22;-11;5;22
Calculated pool fire surface area (m2)	380
Combustion rate of the chemical (kg/s)	13,339
Duration of the fire (s)	11045
Surface emissive power (clear flame) (kW/m2)	37,035

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Surface emissive power (sooted flame) (kW/m2)	23,407
Soot fraction used (-)	0,8
Flame tilt (deg)	26,64
Flame temperature (°C)	628,35
Length of the flame (m)	20,727
Height of clear fraction Flame (m)	1,2603
Weight ratio of HCl/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	146,58
Weight ratio of H2O/chemical (%)	60,014
(Max) Heat radiation level at Xd (kW/m2)	0,0059409
Atmospheric transmissivity at Xd (%)	44,98
(Max) Viewfactor at Xd (-)	0,00054337
Heat radiation dose at Xd ( $s \cdot (kW/m^2)^{4/3}$ )	0,021519
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage lethal burns at Xd (%)	0
Distance to clothing burning dose (m)	13,087

### Sub model information

Sub model LiquidInstant		Instantanenous Liquid Release
Process Conditions		
I	Chemical name	DIMETHYL CARBONATE (DIPPR)
I	Initial temperature in vessel (°C)	20
Process Dimensions		
I	Vessel volume (m3)	145
I	Filling degree (%)	95
Environment		
I	Ambient pressure (bar)	1,0151
Source Definition		
R	Rainout mass (as liquid) (kg)	1,4733E05
R	Temperature of the pool (°C)	20
Sub model PoolFire		Pool Fire
Calculation Method		

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

I	Type of pool fire calculation	Two zone model Rew & Hulbert
I	Fraction combustion heat radiated (-)	0,35
I	Soot definition	Calculate/Default
	<b>Process Dimensions</b>	
I	Type of pool shape (pool fire)	Circular
I	Height of the confined pool above ground level (m)	0
I	Include shielding at bottomside flame	No
	<b>Meteo Definition</b>	
I	Predefined wind direction	W
	<b>Environment</b>	
I	Amount of CO2 in atmosphere (-)	0,0003
	<b>Vulnerability</b>	
I	Maximum heat exposure duration (s)	20
I	Take protective effects of clothing into account	No
I	Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
I	Heat radiation lethal damage Probit B	2,56
I	Heat radiation damage Probit N	1,3333
	<b>Accuracy</b>	
I	Grid resolution	Low
	<b>Reporting</b>	
I	Reporting/receiver height (Zd) (m)	1,5
I	Reporting/receiver distance (Xd) (m)	500
	<b>Fire Results</b>	
R	Equivalent diameter of fire (m)	21,996
R	Max. diameter top flame (m)	25,058
R	Flame footprint dimensions D,-D,DMW,MW	22;-11;5;22
R	Calculated pool fire surface area (m2)	380
R	Combustion rate of the chemical (kg/s)	13,339
R	Duration of the fire (s)	11045
R	Surface emissive power (clear flame) (kW/m2)	37,035
R	Surface emissive power (sooted flame) (kW/m2)	23,407
R	Soot fraction used (-)	0,8
R	Flame tilt (deg)	26,64
R	Flame temperature (°C)	628,35
R	Length of the flame (m)	20,727
R	Height of clear fraction Flame (m)	1,2603
R	Weight ratio of HCl/chemical (%)	0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

R	Weight ratio of NO2/chemical (%)	0
R	Weight ratio of SO2/chemical (%)	0
R	Weight ratio of CO2/chemical (%)	146,58
R	Weight ratio of H2O/chemical (%)	60,014
R	(Max) Heat radiation level at Xd (kW/m2)	0,0059409
R	Atmospheric transmissivity at Xd (%)	44,98
R	(Max) Viewfactor at Xd (-)	0,00054337
R	Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,021519
R	Percentage first degree burns at Xd (%)	0
R	Percentage second degree burns at Xd (%)	0
R	Percentage lethal burns at Xd (%)	0
R	Distance to clothing burning dose (m)	13,087

Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
14,9 kW/m2 heat radiation contour (PoolFire)	18	-14	0	29	14,9
12,5 kW/m2 heat radiation contour (PoolFire)	19	-15	0	31	12,5
12 kW/m2 heat radiation contour (PoolFire)	20	-15	1	32	12
10,2 kW/m2 heat radiation contour (PoolFire)	21	-15	1	34	10,2
9,8 kW/m2 heat radiation contour (PoolFire)	22	-16	1	35	9,8
6,2 kW/m2 heat radiation contour (PoolFire)	27	-19	3	44	6,2
5 kW/m2 heat radiation contour (PoolFire)	30	-20	2	49	5
4,2 kW/m2 heat radiation contour (PoolFire)	32	-22	2	53	4,2
4,1 kW/m2 heat radiation contour (PoolFire)	33	-22	2	54	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour (PoolFire)	22	-16	1	35	1
Other information					
Main program	EFFECTS 12.2.0.23101 Legacy				
Last calculation	2024. 04. 26. 12:43:13				
Last duration	1s 467ms				
Chemical database					
Chemical source	DIPPR				
Chemical source date	2015. 05. 01.				



Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

4. DMC 145 m3\_BLEVE

4 Model: BLEVE Fireball

version: v2024.04.f529c80 (2024. 04. 26.)  
Reference: Static BLEVE: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.7 Dynamic BLEVE: W.E. Martinsen and J.D. Marx, An improved model for the prediction of radiant heat from fireballs, In: proceedings of the international conference and workshop on modelling the consequences of accidental releases of hazardous materials, sept. 28 - oct. 1 1999, San Francisco, California p.p. 605-621. BLEVE Blast: A.C. van den Berg, Blast Charts for Explosive Evaporation of Superheated Liquids, In: Process Safety Progress Volume 27, Issue 3, 17 MAR 2008

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	120
Burst pressure vessel (bar)	2,4092
Calculation Method	
Type of BLEVE calculation	Dynamic BLEVE model
Include BLEVE overpressure effects	Yes
Process Dimensions	
Vessel volume (m3)	145
Filling degree (%)	95
Height of the vessel (fireball offset Z) (m)	0
Environment	
Ambient temperature (°C)	11
Ambient relative humidity (%)	83
Ambient pressure (bar)	1,0151
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Low
Reporting	
Reporting/receiver distance (Xd) (m)	500
Reporting/receiver height (Zd) (m)	1,5

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Results					
Process Conditions					
Liquid temperature at burst pressure (°C)	120				
Source Definition					
Initial mass in vessel (kg)	1,2813E05				
Adiabatic vapour flash fraction (-)	0,15047				
Fire Results					
Total mass involved in BLEVE (kg)	57867				
Duration of the fireball (s)	13,959				
Max. diameter of the fireball (m)	224,34				
Max. height of the fireball (m)	336,51				
Surface emissive power (clear flame) (kW/m2)	81,646				
(Max) Heat radiation level at Xd (kW/m2)	2,3218				
(Max) Viewfactor at Xd (-)	0,047955				
Atmospheric transmissivity at Xd (%)	59,655				
Heat radiation dose at Xd (s*(kW/m2)^4/3)	18,681				
Percentage first degree burns at Xd (%)	0				
Percentage second degree burns at Xd (%)	0				
Percentage lethal burns at Xd (%)	0				
Distance to clothing burning dose (m)	30,696				
Explosion Results					
Peak overpressure at Xd (mbar)	0				
Pressure impulse at Xd (Pa*s)	0				
Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
10,2 kW/m2 heat radiation contour	236	-236	-22	473	10,2
4,2 kW/m2 heat radiation contour	375	-375	-35	749	4,2
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	125	-125	-12	250	1
Overpressure contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [mbar]
100 mbar overpressure contour	12	-12	-1	23	100

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 26. 13:24:13
Last duration	1s 250ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

5. Belső DMC tartály 36,44 m3\_10 perces leürülés

5 Model: Liquid Release

version: v2024.05.a199aff (2024. 05. 02.)  
Reference: Yellow Book, CPR-14E, 3rd edition 1997, Paragraph 2.5.4

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Overpressure above liquid (assuming closed system) (bar)	0
Calculation Method	
Use which representative rate	First 20% average (flammable)
Type of vessel outflow	Vessel empty in specified time
Vessel emptying duration (s)	600
Process Dimensions	
Vessel volume (m3)	36,44
Filling degree (%)	85
Vessel type	Vertical cylinder
Height cylinder (m)	3,5
Hole rounding	Sharp edges
Environment	
Ambient pressure (bar)	1,0151
Results	
Source Definition	

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Initial mass in vessel (kg)	33127
Total mass released (kg)	33127
Time needed to empty vessel (s)	1122
Hole diameter used (mm)	121,07
Maximum mass flow rate (kg/s)	58,316
Representative release rate (kg/s)	55,245
Representative outflow duration (s)	600
Representative pressure (bar)	1,2951
Contour dimensions	
Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 05. 02. 10:42:14
Last duration	0s 23ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

6. Belső DMC tartály 36,44m3\_50 mm lyuk

6 Model: Liquid Release

version: v2024.05.a199aff (2024. 05. 02.)  
Reference: Yellow Book, CPR-14E, 3rd edition 1997, Paragraph 2.5.4

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Overpressure above liquid (assuming closed system) (bar)	0
Calculation Method	
Use which representative rate	First 20% average (flammable)
Type of vessel outflow	Release through hole in vessel
Type of release duration	Calculate until device is empty

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Process Dimensions	
Vessel volume (m3)	36,44
Filling degree (%)	85
Vessel type	Vertical cylinder
Height cylinder (m)	3,5
Hole diameter (mm)	50
Hole rounding	Sharp edges
Height leak above tank bottom (m)	0
Environment	
Ambient pressure (bar)	1,0151
Results	
Source Definition	
Initial mass in vessel (kg)	33127
Total mass released (kg)	33127
Time needed to empty vessel (s)	6585
Hole diameter used (mm)	50
Maximum mass flow rate (kg/s)	9,9456
Representative release rate (kg/s)	9,7071
Representative outflow duration (s)	1800
Representative pressure (bar)	1,3123
Contour dimensions	
Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 05. 02. 10:42:14
Last duration	0s 12ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

### 7. Belső DMC tartály 36,44 m3\_Tócsatűz

#### 7 Model: Liquid LOC Scenario Instantaneous Release

# Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

version: v2024.04.9943f73 (2024. 04. 26.)  
Reference: EFFECTS User manual "Combined models"

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	20
Calculation Method	
Outcome / phenomena	<ul style="list-style-type: none"><li>• Pool fire</li><li>• </li></ul>
Use which representative rate	First 20% average (flammable)
Evaporation from land or water	Land
Maximum evaluation time for evaporation (s)	1800
Type of pool fire calculation	Two zone model Rew & Hulbert
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Use GAME overpressure method	No
Fraction cloud involved in explosion (-)	0,08
Curve number	10 (Detonation)
Process Dimensions	
Vessel volume (m3)	36,44
Filling degree (%)	85
Type of pool growth on Land	Spreading in bunds
Max. pool surface area (m2)	564,77
Type of pool shape (pool fire)	Circular
Height of the confined pool above ground level (m)	0
Include shielding at bottomsides flame	No
Meteo Definition	
Meteorological data	Pasquill
Pasquill stability class	F (Very Stable)
Wind speed at 10 m height (m/s)	2
Predefined wind direction	W
Environment	
Ambient temperature (°C)	20
Ambient pressure (bar)	1,0151
Ambient relative humidity (%)	83

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Temperature of the subsoil (°C)	20
Solar radiation flux	User defined
Solar heat radiation flux (W/m2)	120
Type of subsoil (evaporation)	Average subsoil
Subsurface roughness description on Land (pool)	flat sandy soil, concrete, tiles, plant-yard
Amount of CO2 in atmosphere (-)	0,0003
Roughness length description	High crops; scattered large objects, $15 < x/h < 20$ .
<b>Vulnerability</b>	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Pressure lethality based on	Treshold pressure level
Peak pressure total destruction (Indoors+Outdoors) (mbar)	300
Lethality total destruction (Indoors+Outdoors) (-)	1
Peak pressure indoors (glass) lethality (mbar)	100
Lethality indoors (glass) (-)	0,025
Toxic exposure duration based on	Time limit until sheltering
Start of exposure (after moment of release) (s)	0
Max. duration until sheltering (s)	1800
Perform toxic indoors calculation	No
<b>Accuracy</b>	
Grid resolution	Low
<b>Reporting</b>	
Reporting/receiver distance (Xd) (m)	500
Reporting/receiver height (Zd) (m)	1,5
Ignition time flammable cloud	Time maximum area cloud
Use 50% LFL for cloud contour	No
Use mass between LFL and UFL	No
Show dynamic concentration grid	No
Use defined dose contour	No
<b>Results</b>	
<b>Source Definition</b>	
Rainout mass (as liquid) (kg)	33127
Temperature of the pool (°C)	20

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Fire Results	
Equivalent diameter of fire (m)	26,816
Max. diameter top flame (m)	30,134
Flame footprint dimensions D,-D,DMW,MW	25;-13;5;27
Calculated pool fire surface area (m2)	564,77
Combustion rate of the chemical (kg/s)	19,825
Duration of the fire (s)	1671
Surface emissive power (clear flame) (kW/m2)	38,835
Surface emissive power (sooted flame) (kW/m2)	23,767
Soot fraction used (-)	0,8
Flame tilt (deg)	25,028
Flame temperature (°C)	638,99
Length of the flame (m)	23,787
Height of clear fraction Flame (m)	1,3575
Weight ratio of HCl/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	146,58
Weight ratio of H2O/chemical (%)	60,014
(Max) Heat radiation level at Xd (kW/m2)	0,0086788
Atmospheric transmissivity at Xd (%)	45,401
(Max) Viewfactor at Xd (-)	0,0007738
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )	0,035671
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage lethal burns at Xd (%)	0
Distance to clothing burning dose (m)	15,671

### Sub model information

Sub model LiquidInstant		Instantaneous Liquid Release
Process Conditions		
I	Chemical name	DIMETHYL CARBONATE (DIPPR)
I	Initial temperature in vessel (°C)	20
Process Dimensions		
I	Vessel volume (m3)	36,44
I	Filling degree (%)	85



## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Environment		
I	Ambient pressure (bar)	1,0151
Source Definition		
R	Rainout mass (as liquid) (kg)	33127
R	Temperature of the pool (°C)	20
Sub model PoolFire		Pool Fire
Calculation Method		
I	Type of pool fire calculation	Two zone model Rew & Hulbert
I	Fraction combustion heat radiated (-)	0,35
I	Soot definition	Calculate/Default
Process Dimensions		
I	Type of pool shape (pool fire)	Circular
I	Height of the confined pool above ground level (m)	0
I	Include shielding at bottomside flame	No
Meteo Definition		
I	Predefined wind direction	W
Environment		
I	Amount of CO2 in atmosphere (-)	0,0003
Vulnerability		
I	Maximum heat exposure duration (s)	20
I	Take protective effects of clothing into account	No
I	Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
I	Heat radiation lethal damage Probit B	2,56
I	Heat radiation damage Probit N	1,3333
Accuracy		
I	Grid resolution	Low
Reporting		
I	Reporting/receiver height (Zd) (m)	1,5
I	Reporting/receiver distance (Xd) (m)	500
Fire Results		
R	Equivalent diameter of fire (m)	26,816
R	Max. diameter top flame (m)	30,134
R	Flame footprint dimensions D,-D,DMW,MW	25;-13;5;27
R	Calculated pool fire surface area (m2)	564,77
R	Combustion rate of the chemical (kg/s)	19,825
R	Duration of the fire (s)	1671

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

R	Surface emissive power (clear flame) (kW/m2)	38,835
R	Surface emissive power (sooted flame) (kW/m2)	23,767
R	Soot fraction used (-)	0,8
R	Flame tilt (deg)	25,028
R	Flame temperature (°C)	638,99
R	Length of the flame (m)	23,787
R	Height of clear fraction Flame (m)	1,3575
R	Weight ratio of HCl/chemical (%)	0
R	Weight ratio of NO2/chemical (%)	0
R	Weight ratio of SO2/chemical (%)	0
R	Weight ratio of CO2/chemical (%)	146,58
R	Weight ratio of H2O/chemical (%)	60,014
R	(Max) Heat radiation level at Xd (kW/m2)	0,0086788
R	Atmospheric transmissivity at Xd (%)	45,401
R	(Max) Viewfactor at Xd (-)	0,0007738
R	Heat radiation dose at Xd (s*(kW/m2)^4/3)	0,035671
R	Percentage first degree burns at Xd (%)	0
R	Percentage second degree burns at Xd (%)	0
R	Percentage lethal burns at Xd (%)	0
R	Distance to clothing burning dose (m)	15,671

Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
12,5 kW/m2 heat radiation contour (PoolFire)	23	-17	1	37	12,5
9,8 kW/m2 heat radiation contour (PoolFire)	26	-19	2	42	9,8
4,1 kW/m2 heat radiation contour (PoolFire)	38	-27	2	64	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour (PoolFire)	26	-19	2	42	1
Other information					
Main program		EFFECTS 12.2.0.23101 Legacy			
Last calculation		2024. 04. 26. 11:55:38			
Last duration		1s 434ms			
Chemical database					

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Chemical source	DIPPR
Chemical source date	2015. 05. 01.

8. Belső DMC tartály 36,44 m3\_BLEVE

8 Model: BLEVE Fireball

version: v2024.04.f529c80 (2024. 04. 26.)  
Reference: Static BLEVE: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.7 Dynamic BLEVE: W.E. Martinsen and J.D. Marx, An improved model for the prediction of radiant heat from fireballs, In: proceedings of the international conference and workshop on modelling the consequences of accidental releases of hazardous materials, sept. 28 - oct. 1 1999, San Francisco, California p.p. 605-621. BLEVE Blast: A.C. van den Berg, Blast Charts for Explosive Evaporation of Superheated Liquids, In: Process Safety Progress Volume 27, Issue 3, 17 MAR 2008

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	120
Burst pressure vessel (bar)	2,4092
Calculation Method	
Type of BLEVE calculation	Dynamic BLEVE model
Include BLEVE overpressure effects	Yes
Process Dimensions	
Vessel volume (m3)	36,44
Filling degree (%)	85
Height of the vessel (fireball offset Z) (m)	0
Environment	
Ambient temperature (°C)	11
Ambient relative humidity (%)	83
Ambient pressure (bar)	1,0151
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Grid resolution</b>	Low				
<b>Reporting</b>					
<b>Reporting/receiver distance (Xd) (m)</b>	500				
<b>Reporting/receiver height (Zd) (m)</b>	1,5				
<b>Results</b>					
<b>Process Conditions</b>					
<b>Liquid temperature at burst pressure (°C)</b>	120				
<b>Source Definition</b>					
<b>Initial mass in vessel (kg)</b>	28838				
<b>Adiabatic vapour flash fraction (-)</b>	0,15047				
<b>Fire Results</b>					
<b>Total mass involved in BLEVE (kg)</b>	13039				
<b>Duration of the fireball (s)</b>	9,6173				
<b>Max. diameter of the fireball (m)</b>	136,51				
<b>Max. height of the fireball (m)</b>	204,77				
<b>Surface emissive power (clear flame) (kW/m2)</b>	72,111				
<b>(Max) Heat radiation level at Xd (kW/m2)</b>	0,77231				
<b>(Max) Viewfactor at Xd (-)</b>	0,018306				
<b>Atmospheric transmissivity at Xd (%)</b>	58,884				
<b>Heat radiation dose at Xd (<math>s \cdot (kW/m2)^{4/3}</math>)</b>	3,0742				
<b>Percentage first degree burns at Xd (%)</b>	0				
<b>Percentage second degree burns at Xd (%)</b>	0				
<b>Percentage lethal burns at Xd (%)</b>	0				
<b>Distance to clothing burning dose (m)</b>	0				
<b>Explosion Results</b>					
<b>Peak overpressure at Xd (mbar)</b>	0				
<b>Pressure impulse at Xd (Pa*s)</b>	0				
<b>Contour dimensions</b>					
<b>Heat radiation contours</b>					
<b>Names</b>	<b>Max. dist [m]</b>	<b>Min. dist [m]</b>	<b>Dist. width [m]</b>	<b>Max. width [m]</b>	<b>Value [kW/m2]</b>
<b>12 kW/m2 heat radiation contour</b>	126	-126	-12	253	12
<b>5 kW/m2 heat radiation contour</b>	203	-203	-19	405	5
<b>Lethality contours</b>					
<b>Names</b>	<b>Max. dist [m]</b>	<b>Min. dist [m]</b>	<b>Dist. width [m]</b>	<b>Max. width [m]</b>	<b>Value [%]</b>
<b>1 % lethality contour</b>	56	-56	-5	111	1

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Overpressure contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [mbar]
100 mbar overpressure contour	7	-7	-1	14	100
Other information					
Main program		EFFECTS 12.2.0.23101 Legacy			
Last calculation		2024. 04. 26. 13:24:36			
Last duration		2s 947ms			
Chemical database					
Chemical source		DIPPR			
Chemical source date		2015. 05. 01.			

9. Lefejtő 20 m3\_ 10 perces leürülés

9 Model: Liquid Release

version: v2024.04.a199aff (2024. 04. 23.)  
Reference: Yellow Book, CPR-14E, 3rd edition 1997, Paragraph 2.5.4

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	11
Overpressure above liquid (assuming closed system) (bar)	0
Calculation Method	
Use which representative rate	First 20% average (flammable)
Type of vessel outflow	Vessel empty in specified time
Vessel emptying duration (s)	600
Process Dimensions	
Vessel volume (m3)	20
Filling degree (%)	95
Vessel type	Vertical cylinder
Height cylinder (m)	3,5
Hole rounding	Sharp edges
Environment	

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Ambient pressure (bar)	1,0151
Results	
Source Definition	
Initial mass in vessel (kg)	20535
Total mass released (kg)	20535
Time needed to empty vessel (s)	1122
Hole diameter used (mm)	92,243
Maximum mass flow rate (kg/s)	36,163
Representative release rate (kg/s)	34,258
Representative outflow duration (s)	599
Representative pressure (bar)	1,3314
Contour dimensions	
Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 23. 11:33:12
Last duration	0s 24ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

10. Lefejtő 20 m3\_ Tócsatűz

10 Model: Pool Fire

version: v2024.04.286f896 (2024. 04. 23.)  
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Calculation Method	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
<b>Source Definition</b>	
Total mass released (kg)	21616
Temperature of the pool (°C)	11
<b>Process Dimensions</b>	
Type of pool shape (pool fire)	Circular
Max. pool fire surface area (m2)	79
Height of the confined pool above ground level (m)	0
Include shielding at bottomsides flame	No
<b>Meteo Definition</b>	
Wind speed at 10 m height (m/s)	2
Predefined wind direction	W
<b>Environment</b>	
Ambient temperature (°C)	11
Ambient pressure (bar)	1,0151
Ambient relative humidity (%)	83
Amount of CO2 in atmosphere (-)	0,0003
<b>Vulnerability</b>	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
<b>Accuracy</b>	
Grid resolution	Low
<b>Reporting</b>	
Reporting/receiver height (Zd) (m)	1,5
Reporting/receiver distance (Xd) (m)	100
<b>Results</b>	
<b>Fire Results</b>	
Equivalent diameter of fire (m)	10,029
Flame footprint dimensions D,-D,DMW,MW	12;-5;3;10
Calculated pool fire surface area (m2)	79

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Combustion rate of the chemical (kg/s)	2,683
Duration of the fire (s)	8056,7
Surface emissive power flame (kW/m2)	22,944
Soot fraction used (-)	0,8
Flame tilt (deg)	41,831
Flame temperature (°C)	527,6
Length of the flame (m)	9,8338
Weight ratio of HCl/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	146,58
Weight ratio of H2O/chemical (%)	60,014
(Max) Heat radiation level at Xd (kW/m2)	0,037844
Atmospheric transmissivity at Xd (%)	62,579
(Max) Viewfactor at Xd (-)	0,0026358
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )	0,25411
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage lethal burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
12,5 kW/m2 heat radiation contour	11	-6	1	14	12,5
9,8 kW/m2 heat radiation contour	12	-7	2	16	9,8
4,1 kW/m2 heat radiation contour	16	-10	2	24	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	12	-7	2	16	1

Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 23. 14:58:10
Last duration	1s 237ms
Chemical database	
Chemical source	DIPPR



# Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Chemical source date

2015. 05. 01.

## 11. Lefejtő 20 m3\_ BLEVE

### 11 Model: BLEVE Fireball

version: v2024.04.f529c80 (2024. 04. 23.)  
Reference: Static BLEVE: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.7 Dynamic BLEVE: W.E. Martinsen and J.D. Marx, An improved model for the prediction of radiant heat from fireballs, In: proceedings of the international conference and workshop on modelling the consequences of accidental releases of hazardous materials, sept. 28 - oct. 1 1999, San Francisco, California p.p. 605-621. BLEVE Blast: A.C. van den Berg, Blast Charts for Explosive Evaporation of Superheated Liquids, In: Process Safety Progress Volume 27, Issue 3, 17 MAR 2008

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Initial temperature in vessel (°C)	120
Burst pressure vessel (bar)	2,42
Calculation Method	
Type of BLEVE calculation	Dynamic BLEVE model
Include BLEVE overpressure effects	Yes
Process Dimensions	
Vessel volume (m3)	20
Filling degree (%)	90
Height of the vessel (fireball offset Z) (m)	0
Environment	
Ambient temperature (°C)	11
Ambient relative humidity (%)	83
Ambient pressure (bar)	1,0151
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	
Grid resolution	Low

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Reporting</b>					
Reporting/receiver distance (Xd) (m)					500
Reporting/receiver height (Zd) (m)					1,5
<b>Results</b>					
<b>Process Conditions</b>					
Liquid temperature at burst pressure (°C)					120,07
<b>Source Definition</b>					
Initial mass in vessel (kg)					16750
Adiabatic vapour flash fraction (-)					0,15082
<b>Fire Results</b>					
Total mass involved in BLEVE (kg)					7586,5
Duration of the fireball (s)					8,3995
Max. diameter of the fireball (m)					113,97
Max. height of the fireball (m)					170,95
Surface emissive power (clear flame) (kW/m2)					69,028
(Max) Heat radiation level at Xd (kW/m2)					0,51626
(Max) Viewfactor at Xd (-)					0,012829
Atmospheric transmissivity at Xd (%)					58,683
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )					1,5808
Percentage first degree burns at Xd (%)					0
Percentage second degree burns at Xd (%)					0
Percentage lethal burns at Xd (%)					0
Distance to clothing burning dose (m)					0
<b>Explosion Results</b>					
Peak overpressure at Xd (mbar)					0
Pressure impulse at Xd (Pa*s)					0
<b>Contour dimensions</b>					
<b>Heat radiation contours</b>					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
14,9 kW/m2 heat radiation contour	91	-91	-9	183	14,9
6,2 kW/m2 heat radiation contour	150	-150	-14	299	6,2
<b>Lethality contours</b>					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	41	-41	-4	81	1
<b>Overpressure contours</b>					

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [mbar]
100 mbar overpressure contour	6	-6	-1	12	100
Other information					
Main program	EFFECTS 12.2.0.23101 Legacy				
Last calculation	2024. 04. 23. 15:05:34				
Last duration	4s 427ms				
Chemical database					
Chemical source	DIPPR				
Chemical source date	2015. 05. 01.				

12. Alacsony hőmérsékletű raktár\_Tócsatűz

12 Model: Pool Fire

version: v2024.04.286f896 (2024. 04. 24.)  
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	8,09E05
Temperature of the pool (°C)	11
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool fire surface area (m2)	1009
Height of the confined pool above ground level (m)	0
Include shielding at bottomsides flame	No

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Meteo Definition</b>	
Wind speed at 10 m height (m/s)	1
Predefined wind direction	W
<b>Environment</b>	
Ambient temperature (°C)	11
Ambient pressure (bar)	1,0151
Ambient relative humidity (%)	83
Amount of CO2 in atmosphere (-)	0,0003
<b>Vulnerability</b>	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
<b>Accuracy</b>	
Grid resolution	Low
<b>Reporting</b>	
Reporting/receiver height (Zd) (m)	1,5
Reporting/receiver distance (Xd) (m)	100
<b>Results</b>	
<b>Fire Results</b>	
Equivalent diameter of fire (m)	35,843
Flame footprint dimensions D,-D,DMW,MW	29;-18;5;36
Calculated pool fire surface area (m2)	1009
Combustion rate of the chemical (kg/s)	34,267
Duration of the fire (s)	23608
Surface emissive power flame (kW/m2)	25,082
Soot fraction used (-)	0,8
Flame tilt (deg)	25,563
Flame temperature (°C)	545,36
Length of the flame (m)	24,762
Weight ratio of HCl/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	146,58
Weight ratio of H2O/chemical (%)	60,014

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

(Max) Heat radiation level at Xd (kW/m2)	0,55721
Atmospheric transmissivity at Xd (%)	64,487
(Max) Viewfactor at Xd (-)	0,03445
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )	9,1704
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage lethal burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
14,9 kW/m2 heat radiation contour	26	-22	1	46	14,9
12,5 kW/m2 heat radiation contour	29	-23	1	49	12,5
12 kW/m2 heat radiation contour	29	-23	1	50	12
10,2 kW/m2 heat radiation contour	32	-24	2	53	10,2
9,8 kW/m2 heat radiation contour	32	-24	2	54	9,8
6,2 kW/m2 heat radiation contour	39	-29	2	66	6,2
5 kW/m2 heat radiation contour	43	-32	4	72	5
4,2 kW/m2 heat radiation contour	46	-34	4	78	4,2
4,1 kW/m2 heat radiation contour	46	-34	4	79	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	32	-24	2	54	1

Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 24. 12:33:21
Last duration	2s 36ms
Chemical database	
Chemical source	DIPPR
Chemical source date	2015. 05. 01.

## 13. Csomagoló és kirakodó helyiség\_Tócsatűz

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

13     Model: Pool Fire

version: v2024.04.286f896 (2024. 04. 24.)  
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	
Total mass released (kg)	1E05
Temperature of the pool (°C)	11
Process Dimensions	
Type of pool shape (pool fire)	Circular
Max. pool fire surface area (m2)	356,44
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
Meteo Definition	
Wind speed at 10 m height (m/s)	1
Predefined wind direction	W
Environment	
Ambient temperature (°C)	11
Ambient pressure (bar)	1,0151
Ambient relative humidity (%)	83
Amount of CO2 in atmosphere (-)	0,0003
Vulnerability	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
Accuracy	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Grid resolution</b>	Low				
<b>Reporting</b>					
Reporting/receiver height (Zd) (m)	1,5				
Reporting/receiver distance (Xd) (m)	100				
<b>Results</b>					
<b>Fire Results</b>					
Equivalent diameter of fire (m)	21,303				
Flame footprint dimensions D,-D,DMW,MW	19;-11;4;21				
Calculated pool fire surface area (m2)	356,44				
Combustion rate of the chemical (kg/s)	12,105				
Duration of the fire (s)	8260,8				
Surface emissive power flame (kW/m2)	23,968				
Soot fraction used (-)	0,8				
Flame tilt (deg)	27,71				
Flame temperature (°C)	536,25				
Length of the flame (m)	17,519				
Weight ratio of HCl/chemical (%)	0				
Weight ratio of NO2/chemical (%)	0				
Weight ratio of SO2/chemical (%)	0				
Weight ratio of CO2/chemical (%)	146,58				
Weight ratio of H2O/chemical (%)	60,014				
(Max) Heat radiation level at Xd (kW/m2)	0,19465				
Atmospheric transmissivity at Xd (%)	63,467				
(Max) Viewfactor at Xd (-)	0,012796				
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )	2,2561				
Percentage first degree burns at Xd (%)	0				
Percentage second degree burns at Xd (%)	0				
Percentage lethal burns at Xd (%)	0				
Distance to clothing burning dose (m)	0				
<b>Contour dimensions</b>					
<b>Heat radiation contours</b>					
<b>Names</b>	<b>Max. dist [m]</b>	<b>Min. dist [m]</b>	<b>Dist. width [m]</b>	<b>Max. width [m]</b>	<b>Value [kW/m2]</b>
14,9 kW/m2 heat radiation contour	17	-13	0	28	14,9
12,5 kW/m2 heat radiation contour	18	-14	1	30	12,5
12 kW/m2 heat radiation contour	19	-14	1	30	12

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

10,2 kW/m2 heat radiation contour	20	-15	1	33	10,2
9,8 kW/m2 heat radiation contour	21	-15	1	33	9,8
6,2 kW/m2 heat radiation contour	25	-18	2	41	6,2
5 kW/m2 heat radiation contour	28	-19	2	45	5
4,2 kW/m2 heat radiation contour	30	-21	2	49	4,2
4,1 kW/m2 heat radiation contour	30	-21	2	49	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	20	-15	2	33	1
Other information					
Main program		EFFECTS 12.2.0.23101 Legacy			
Last calculation		2024. 04. 24. 12:33:21			
Last duration		1s 714ms			
Chemical database					
Chemical source		DIPPR			
Chemical source date		2015. 05. 01.			

14. Magas hőmérsékletű raktár\_Tócsatűz

14 Model: Pool Fire

version: v2024.04.286f896 (2024. 04. 24.)  
Reference: Yellow Book (CPR-14E), 3rd edition 1997, Paragraph 6.5.4~Rew, P.J. & Hulbert, W.G. (1997) Modelling of Thermal radiation from external hydrocarbon poolfires, in Trans IChemE, Vol.75 part B,~Rew, P.J. & Hulbert, W.G. (1996), Development of a pool fire thermal radiation model', HSE Contract research report no. 96, ~ Damage: Green Book 1st edition 1992, chapter 1 (Heat radiation); pages 11-36~

Parameters	
Inputs	
Process Conditions	
Chemical name	DIMETHYL CARBONATE (DIPPR)
Calculation Method	
Type of pool fire calculation	Pool fire model Yellow Book
Type of pool fire source	Instantaneous
Fraction combustion heat radiated (-)	0,35
Soot definition	Calculate/Default
Source Definition	



## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Total mass released (kg)	1,264E05
Temperature of the pool (°C)	11
<b>Process Dimensions</b>	
Type of pool shape (pool fire)	Circular
Max. pool fire surface area (m2)	144
Height of the confined pool above ground level (m)	0
Include shielding at bottomside flame	No
<b>Meteo Definition</b>	
Wind speed at 10 m height (m/s)	1
Predefined wind direction	W
<b>Environment</b>	
Ambient temperature (°C)	11
Ambient pressure (bar)	1,0151
Ambient relative humidity (%)	83
Amount of CO2 in atmosphere (-)	0,0003
<b>Vulnerability</b>	
Maximum heat exposure duration (s)	20
Take protective effects of clothing into account	No
Heat radiation lethal damage Probit A ((sec*(W/m2)^n))	-36,38
Heat radiation lethal damage Probit B	2,56
Heat radiation damage Probit N	1,3333
<b>Accuracy</b>	
Grid resolution	Low
<b>Reporting</b>	
Reporting/receiver height (Zd) (m)	1,5
Reporting/receiver distance (Xd) (m)	100
<b>Results</b>	
<b>Fire Results</b>	
Equivalent diameter of fire (m)	13,541
Flame footprint dimensions D,-D,DMW,MW	13;-7;3;14
Calculated pool fire surface area (m2)	144
Combustion rate of the chemical (kg/s)	4,8905
Duration of the fire (s)	25846
Surface emissive power flame (kW/m2)	23,078
Soot fraction used (-)	0,8
Flame tilt (deg)	29,629

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Flame temperature (°C)	528,75
Length of the flame (m)	12,961
Weight ratio of HCl/chemical (%)	0
Weight ratio of NO2/chemical (%)	0
Weight ratio of SO2/chemical (%)	0
Weight ratio of CO2/chemical (%)	146,58
Weight ratio of H2O/chemical (%)	60,014
(Max) Heat radiation level at Xd (kW/m2)	0,080567
Atmospheric transmissivity at Xd (%)	62,731
(Max) Viewfactor at Xd (-)	0,0055652
Heat radiation dose at Xd ( $s \cdot (kW/m2)^{4/3}$ )	0,69594
Percentage first degree burns at Xd (%)	0
Percentage second degree burns at Xd (%)	0
Percentage lethal burns at Xd (%)	0
Distance to clothing burning dose (m)	0

Contour dimensions					
Heat radiation contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [kW/m2]
14,9 kW/m2 heat radiation contour	11	-8	0	18	14,9
12,5 kW/m2 heat radiation contour	12	-9	1	20	12,5
12 kW/m2 heat radiation contour	13	-9	1	20	12
10,2 kW/m2 heat radiation contour	14	-10	1	22	10,2
9,8 kW/m2 heat radiation contour	14	-10	1	22	9,8
6,2 kW/m2 heat radiation contour	17	-12	2	27	6,2
5 kW/m2 heat radiation contour	19	-13	2	30	5
4,2 kW/m2 heat radiation contour	20	-14	2	32	4,2
4,1 kW/m2 heat radiation contour	21	-14	2	33	4,1
Lethality contours					
Names	Max. dist [m]	Min. dist [m]	Dist. width [m]	Max. width [m]	Value [%]
1 % lethality contour	14	-10	1	22	1

Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 04. 24. 12:33:21
Last duration	1s 617ms
Chemical database	



## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Roughness length description</b>	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	
<b>Vulnerability</b>											
<b>Toxic exposure duration based on</b>	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	
<b>Start of exposure (after moment of release) (s)</b>	0	0	0	0	0	0	0	0	0	0	
<b>Max. duration until sheltering (s)</b>	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	
<b>Perform toxic indoors calculation</b>	No	No	No	No	No	No	No	No	No	No	
<b>Accuracy</b>											
<b>Grid resolution</b>	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	
<b>Reporting</b>											
<b>Concentration averaging time (s)</b>	600	600	600	600	600	600	600	600	600	600	
<b>Reporting/receiver distance (Xd) (m)</b>	500	500	500	500	500	500	500	500	500	500	
<b>Reporting/receiver height (Zd) (m)</b>	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	
<b>Use defined dose contour</b>	No	No	No	No	No	No	No	No	No	No	
<b>Show dynamic concentration grid</b>	No	No	No	No	No	No	No	No	No	No	
<b>Results</b>	<b>E3</b>	<b>F1</b>	<b>E1</b>	<b>D10</b>	<b>B3</b>	<b>B1</b>	<b>D3</b>	<b>D1</b>	<b>F3</b>		
<b>Meteo Definition</b>											
<b>Inverse Monin-Obukhov length (1/L) used (1/m)</b>	0,016326	<b>0,057143</b>	0,016326	<b>0</b>	<b>-0,057143</b>	<b>-0,057143</b>	<b>0</b>	<b>0</b>	<b>0,057143</b>		
<b>Concentration Results</b>											
<b>Threshold concentration used (mg/m3)</b>	166,51	166,51	166,51	166,51	166,51	166,51	166,51	166,51	166,51	166,51	
<b>Effective release height (m)</b>	0	0	0	0	0	0	0	0	0	0	
<b>Toxic Results</b>											
<b>Dose at (Xd, Yd, Zd) (min*(mg/m3)^n)</b>	1,2157E05	<b>0</b>	<b>0</b>	<b>5768,5</b>	<b>3537,1</b>	<b>1148,2</b>	<b>26757</b>	<b>0,057254</b>	<b>4,8298E05</b>		
<b>Lethality at (Xd, Yd, Zd) (-)</b>	0,045347	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0,000674260</b>		<b>0,37742</b>		
<b>LC50 Human 30 min (mg/m3)</b>	784,69	784,69	784,69	784,69	784,69	784,69	784,69	784,69	784,69	784,69	
<b>Contour maximum distances</b>											
<b>Lethality contours distance [m]</b>			<b>E3</b>	<b>F1</b>	<b>E1</b>	<b>D10</b>	<b>B3</b>	<b>B1</b>	<b>D3</b>	<b>D1</b>	<b>F3</b>
1 % lethality dose			660	<b>38</b>	<b>47</b>	<b>205</b>	<b>180</b>	<b>91</b>	<b>357</b>	<b>65</b>	<b>1155</b>
<b>Concentration contours distance [m]</b>			<b>E3</b>	<b>F1</b>	<b>E1</b>	<b>D10</b>	<b>B3</b>	<b>B1</b>	<b>D3</b>	<b>D1</b>	<b>F3</b>

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

1% lethality concentration at 1.5m	1061	42	59	300	263	127	548	91	1842
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## Other information

Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 05. 02. 11:35:39

**16. Alacsony hőmérsékletű raktár 1\_Raktártűz HF terjedés\_sérülés**

## 16 Model: Dispersion - Toxic Dose

version: v2024.04.fc0bd54 (2024. 04. 24.)

Reference: Yellow Book 3rd edition 1997 chapter 4; Ermak, D.L. User manual for SLAB Lawrence Livermore National Laboratory, June 1990

Parameters									
Inputs	B3	F1	D3	B1	D1	E3	F3	E1	D10
Process Conditions									
Chemical name	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)	HYDROGEN FLUORIDE_sérülé s (DIPPR, edited)
Calculation Method									
Type of release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release	Evaporating pool release
Source Definition									
Mass flow rate of the source (kg/s)	2,1275	2,1275	2,1275	2,1275	2,1275	2,1275	2,1275	2,1275	2,1275
Duration of the release (s)	600	600	600	600	600	600	600	600	600
Representative temperature (°C)	11	11	11	11	11	11	11	11	11
Pool surface area (m2)	519,88	519,88	519,88	519,88	519,88	519,88	519,88	519,88	519,88
Meteo Definition									

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Meteorological data	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill
Pasquill stability class	B (Unstable)	F (Very Stable)	D (Neutral)	B (Unstable)	D (Neutral)	E (Stable)	F (Very Stable)	E (Stable)	D (Neutral)
Reference height (m)	10	10	10	10	10	10	10	10	10
Wind speed at reference height (m/s)	3	1	3	1	1	3	3	1	10
Predefined wind direction	W	W	W	W	W	W	W	W	W
Environment									
Ambient temperature (°C)	11	11	11	11	11	11	11	11	11
Ambient pressure (bar)	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151
Ambient relative humidity (%)	83	83	83	83	83	83	83	83	83
Roughness length description	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.
Vulnerability									
Toxic exposure duration based on	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering
Start of exposure (after moment of release) (s)	0	0	0	0	0	0	0	0	0
Max. duration until sheltering (s)	1800	1800	1800	1800	1800	1800	1800	1800	1800
Perform toxic indoors calculation	No	No	No	No	No	No	No	No	No
Accuracy									
Grid resolution	Low	Low	Low	Low	Low	Low	Low	Low	Low
Reporting									

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Concentration averaging time (s)	600	600	600	600	600	600	600	600	600				
Reporting/receiver distance (Xd) (m)	500	500	500	500	500	500	500	500	500				
Reporting/receiver height (Zd) (m)	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5				
Use defined dose contour	No	No	No	No	No	No	No	No	No				
Show dynamic concentration grid	No	No	No	No	No	No	No	No	No				
Results	B3	F1	D3	B1	D1	E3	F3	E1	D10				
Meteo Definition													
Inverse Monin-Obukhov length (1/L) used (1/m)	-0,057143	0,057143	0	-0,057143	0	0,016326	0,057143	0,016326	0				
Concentration Results													
Threshold concentration used (mg/m3)	22,43	22,43	22,43	22,43	22,43	22,43	22,43	22,43	22,43				
Effective release height (m)	0	0	0	0	0	0	0	0	0				
Toxic Results													
Dose at (Xd, Yd, Zd) (min*(mg/m3)^n)	3537	0	26757	1147,8	0,057254	1,2158E05	4,8298E05	0	5768,5				
Lethality at (Xd, Yd, Zd) (-)	0,013791	0	0,57321	0	0	0,97562	1	0	0,051972				
LC50 Human 30 min (mg/m3)	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442				
Contour maximum distances													
Lethality contours distance [m]					B3	F1	D3	B1	D1	E3	F3	E1	D10
1 % lethality dose					518	50	1079	233	132	2202	3661	85	618

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Concentration contours distance [m]	B3	F1	D3	B1	D1	E3	F3	E1	D10
1% lethality concentration at 1.5m	759	53	1593	581	152	3517	6082	100	897

## Other information

## Main program

## Last calculation

EFFECTS 12.2.0.23101 Legacy

2024.05.02.11:38:45

## 17. Alacsony hőmérsékletű raktár 2\_ Raktártűz HF terjedés\_hálózás

## 17 Model: Dispersion - Toxic Dose

version: v2024.04.fc0bd54 (2024. 04. 24.)

Reference: Yellow Book 3rd edition 1997 chapter 4; Ermak, D.L. User manual for SLAB Lawrence Livermore National Laboratory, June 1990

[illegible]



## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

[illegible]

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Contour maximum distances									
Lethality contours distance [m]	F1	D10	D1	E3	E1	B1	B3	D3	F3
1 % lethality dose	35	201	64	644	46	90	177	349	1127
Concentration contours distance [m]	F1	D10	D1	E3	E1	B1	B3	D3	F3
1% lethality concentration at 1.5m	39	294	90	1037	58	125	258	537	1794
Other information									
Main program	EFFECTS 12.2.0.23101 Legacy								
Last calculation	2024. 05. 02. 11:39:49								

**18. Alacsony hőmérsékletű raktár 2\_ Raktártűz HF terjedés\_sérülés**

## 18 Model: Dispersion - Toxic Dose

version: v2024.04.fc0bd54 (2024. 04. 24.)

Reference: Yellow Book 3rd edition 1997 chapter 4; Ermak, D.L. User manual for SLAB Lawrence Livermore National Laboratory, June 1990

[illegible]

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

[illegible]

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Perform toxic indoors calculation</b>	No	No	No	No	No	No	No	No	No
<b>Accuracy</b>									
<b>Grid resolution</b>	Low	Low	Low	Low	Low	Low	Low	Low	Low
<b>Reporting</b>									
<b>Concentration averaging time (s)</b>	600	600	600	600	600	600	600	600	600
<b>Reporting/receiver distance (Xd) (m)</b>	500	500	500	500	500	500	500	500	500
<b>Reporting/receiver height (Zd) (m)</b>	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
<b>Use defined dose contour</b>	No	No	No	No	No	No	No	No	No
<b>Show dynamic concentration grid</b>	No	No	No	No	No	No	No	No	No
<b>Results</b>	<b>D10</b>	<b>B3</b>	<b>F1</b>	<b>E1</b>	<b>D3</b>	<b>F3</b>	<b>E3</b>	<b>B1</b>	<b>D1</b>
<b>Meteo Definition</b>									
<b>Inverse Monin-Obukhov length (1/L) used (1/m)</b>	0	-0,057143	0,057143	0,016326	0	0,057143	0,016326	-0,057143	0
<b>Concentration Results</b>									
<b>Threshold concentration used (mg/m3)</b>	22,43	22,43	22,43	22,43	22,43	22,43	22,43	22,43	22,43
<b>Effective release height (m)</b>	0	0	0	0	0	0	0	0	0
<b>Toxic Results</b>									
<b>Dose at (Xd, Yd, Zd) (min*(mg/m3)^n)</b>	5424,1	3327,1	0	0	25260	4,5577E05	1,1523E05	1178,2	0,068652
<b>Lethality at (Xd, Yd, Zd) (-)</b>	0,04469	0,011441	0	0	0,54641	1	0,97177	0	0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

LC50 Human 30 min (mg/m3)	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442
Contour maximum distances									
Lethality contours distance [m]	D10	B3	F1	E1	D3	F3	E3	B1	D1
1 % lethality dose	605	508	47	85	1058	3616	2141	233	129
Concentration contours distance [m]									
1% lethality concentration at 1.5m	878	743	50	99	1562	5924	3438	587	150
Other information									
Main program	EFFECTS 12.2.0.23101 Legacy								
Last calculation	2024. 05. 02. 11:40:52								

## 19. Csomagoló Raktártűz\_HF terjedés\_hálózás

## 19 Model: Dispersion - Toxic Dose

version: v2024.04.fc0bd54 (2024. 04. 24.)

Reference: Yellow Book 3rd edition 1997 chapter 4; Ermak, D.L. User manual for SLAB Lawrence Livermore National Laboratory, June 1990

[illegible]

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Pool surface area (m2)	356,44	356,44	356,44	356,44	356,44	356,44	356,44	356,44	356,44
Meteo Definition									
Meteorological data	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill	Pasquill
Pasquill stability class	E (Stable)	<b>D (Neutral)</b>	<b>D (Neutral)</b>	<b>B (Unstable)</b>	<b>D (Neutral)</b>	<b>B (Unstable)</b>	<b>F (Very Stable)</b>	<b>F (Very Stable)</b>	E (Stable)
Reference height (m)	10	10	10	10	10	10	10	10	10
Wind speed at reference height (m/s)	1	1	<b>3</b>	1	<b>10</b>	<b>3</b>	1	<b>3</b>	<b>3</b>
Predefined wind direction	W	W	W	W	W	W	W	W	W
Environment									
Ambient temperature (°C)	11	11	11	11	11	11	11	11	11
Ambient pressure (bar)	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151	1,0151
Ambient relative humidity (%)	83	83	83	83	83	83	83	83	83
Roughness length description	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.	Low crops; occasional large obstacles, x/h > 20.
Vulnerability									
Toxic exposure duration based on	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering	Time limit until sheltering
Start of exposure (after moment of release) (s)	0	0	0	0	0	0	0	0	0
Max. duration until sheltering (s)	1800	1800	1800	1800	1800	1800	1800	1800	1800
Perform toxic indoors calculation	No	No	No	No	No	No	No	No	No
Accuracy									
Grid resolution	Low	Low	Low	Low	Low	Low	Low	Low	Low
Reporting									
Concentration averaging time (s)	600	600	600	600	600	600	600	600	600
Reporting/receiver distance (Xd) (m)	500	500	500	500	500	500	500	500	500
Reporting/receiver height (Zd) (m)	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Use defined dose contour	No	No	No	No	No	No	No	No	No
Show dynamic concentration grid	No	No	No	No	No	No	No	No	No
Results	E1	D1	D3	B1	D10	B3	F1	F3	E3
Meteo Definition									
Inverse Monin-Obukhov length (1/L) used (1/m)	0,016326	0	0	-0,057143	0	-0,057143	0,057143	0,057143	0,016326
Concentration Results									

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

[illegible]

Contour maximum distances									
Lethality contours distance [m]	E1	D1	D3	B1	D10	B3	F1	F3	E3
1 % lethality dose	45	216	132	112	63	63	29	361	205
Concentration contours distance [m]	E1	D1	D3	B1	D10	B3	F1	F3	E3
1% lethality concentration at 1.5m	54	344	203	170	99	95	32	595	323

Other information	
Main program	EFFECTS 12.2.0.23101 Legacy
Last calculation	2024. 05. 02. 11:42:13

## 20. Csomagoló Raktártűz\_HF terjedés\_sérülés

## 20 Model: Dispersion - Toxic Dose

version: v2024.04.fc0bd54 (2024. 04. 24.)

Reference: Yellow Book 3rd edition 1997 chapter 4; Ermak, D.L. User manual for SLAB Lawrence Livermore National Laboratory, June 1990

Parameters									
Inputs	D1	D3	B1	D10	F1	F3	E3	E1	B3
Process Conditions									
Chemical name	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN	HYDROGEN
	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérülé s (DIPPR, edited)	FLUORIDE_sérü s (DIPPR, edited)
Calculation Method									

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

[illegible]





Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Dose at (Xd, Yd, Zd)	6867,2	1832,8	845,11	333,81	0	31262	7957,7	0	207,5
(min*(mg/m3)^n)									
Lethality at (Xd, Yd, Zd) (-)	0,07776	0,0014459	0	0	0	0,64362	0,10631	0	0
LC50 Human 30 min (mg/m3)	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442	83,442
Contour maximum distances									
Lethality contours distance [m]					D1	D3	B1	D10	F1 F3 E3 E1 B3
1 % lethality dose					643	411	330	221	38 1248 729 71 196
Concentration contours distance [m]									
1% lethality concentration at 1.5m					D1	D3	B1	D10	F1 F3 E3 E1 B3
					959	616	475	322	40 1961 1123 79 284
Other information									
Main program					EFFECTS 12.2.0.23101 Legacy				
Last calculation					2024. 05. 02. 11:43:20				

Total population

Input parameters	
Calculation Method	
Inside fraction at day (-)	0,93
Inside fraction at night (-)	0,99
Accuracy	
Grid cellsize (m)	10
Result grids	
Day grid	
Bounds: lower-left	2 009 561,2, 6 062 544,8
Bounds: upper-right	2 016 103,1, 6 066 053,7
Total population	7 452,0
Night grid	

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Bounds: lower-left	2 009 561,2, 6 062 544,8
Bounds: upper-right	2 016 103,1, 6 066 053,7
Total population	7 345,6
<b>Sub-populations</b>	
<b>Lakosság (polygon)</b>	
Last calculation	2024. 04. 26. 10:30:15
<b>Day result grid</b>	
Bounds: lower-left	2 009 561,2, 6 064 463,2
Bounds: upper-right	2 013 338,5, 6 066 039,6
Total population	283,1
Average per cell	0,0
<b>Night result grid</b>	
Bounds: lower-left	2 009 561,2, 6 064 463,2
Bounds: upper-right	2 013 338,5, 6 066 039,6
Total population	404,0
Average per cell	0,0
<b>Lakosság2 (polygon)</b>	
Last calculation	2024. 04. 25. 15:48:23
<b>Day result grid</b>	
Bounds: lower-left	2 013 821,6, 6 063 087,6
Bounds: upper-right	2 016 081,7, 6 065 317,9
Total population	174,9
Average per cell	0,0
<b>Night result grid</b>	
Bounds: lower-left	2 013 821,6, 6 063 087,6
Bounds: upper-right	2 016 081,7, 6 065 317,9
Total population	249,6
Average per cell	0,0
<b>SK On (polygon)</b>	
Last calculation	2024. 05. 02. 12:10:00
<b>Day result grid</b>	
Bounds: lower-left	2 010 379,1, 6 062 872,0
Bounds: upper-right	2 011 256,3, 6 063 674,9
Total population	2 885,0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Average per cell	1,9
<b>Night result grid</b>	
Bounds: lower-left	2 010 379,1, 6 062 872,0
Bounds: upper-right	2 011 256,3, 6 063 674,9
Total population	2 885,0
Average per cell	1,9
<b>Alu metal (polygon)</b>	
Last calculation	2024. 04. 25. 17:23:04
<b>Day result grid</b>	
Bounds: lower-left	2 010 572,4, 6 062 544,8
Bounds: upper-right	2 011 390,2, 6 063 213,9
Total population	103,0
Average per cell	0,1
<b>Night result grid</b>	
Bounds: lower-left	2 010 572,4, 6 062 544,8
Bounds: upper-right	2 011 390,2, 6 063 213,9
Total population	103,0
Average per cell	0,1
<b>JWH (polygon)</b>	
Last calculation	2024. 04. 25. 17:23:04
<b>Day result grid</b>	
Bounds: lower-left	2 011 122,7, 6 062 842,3
Bounds: upper-right	2 011 702,5, 6 063 347,8
Total population	110,0
Average per cell	0,2
<b>Night result grid</b>	
Bounds: lower-left	2 011 122,7, 6 062 842,3
Bounds: upper-right	2 011 702,5, 6 063 347,8
Total population	110,0
Average per cell	0,2
<b>Autoneum (polygon)</b>	
Last calculation	2024. 04. 25. 17:24:54
<b>Day result grid</b>	
Bounds: lower-left	2 011 330,8, 6 063 020,7

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Bounds: upper-right	2 012 059,4, 6 063 645,2
Total population	135,0
Average per cell	0,1
<b>Night result grid</b>	
Bounds: lower-left	2 011 330,8, 6 063 020,7
Bounds: upper-right	2 012 059,4, 6 063 645,2
Total population	135,0
Average per cell	0,1
<b>Mylan Hungary Kft. (polygon)</b>	
Last calculation	2024. 04. 25. 17:36:56
<b>Day result grid</b>	
Bounds: lower-left	2 011 747,2, 6 063 318,1
Bounds: upper-right	2 012 535,3, 6 064 002,1
Total population	721,0
Average per cell	0,6
<b>Night result grid</b>	
Bounds: lower-left	2 011 747,2, 6 063 318,1
Bounds: upper-right	2 012 535,3, 6 064 002,1
Total population	721,0
Average per cell	0,6
<b>Easy Logistics (polygon)</b>	
Last calculation	2024. 04. 25. 17:36:56
<b>Day result grid</b>	
Bounds: lower-left	2 012 342,1, 6 063 898,1
Bounds: upper-right	2 012 609,7, 6 064 165,8
Total population	7,0
Average per cell	0,0
<b>Night result grid</b>	
Bounds: lower-left	2 012 342,1, 6 063 898,1
Bounds: upper-right	2 012 609,7, 6 064 165,8
Total population	7,0
Average per cell	0,0
<b>HTNS (polygon)</b>	
Last calculation	2024. 05. 02. 12:11:56

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Day result grid</b>	
Bounds: lower-left	2 011 524,2, 6 064 061,7
Bounds: upper-right	2 011 881,1, 6 064 433,4
Total population	123,0
Average per cell	0,4
<b>Night result grid</b>	
Bounds: lower-left	2 011 524,2, 6 064 061,7
Bounds: upper-right	2 011 881,1, 6 064 433,4
Total population	0,0
Average per cell	0,0
<b>Cordon Electronic (polygon)</b>	
Last calculation	2024. 05. 02. 12:11:56
<b>Day result grid</b>	
Bounds: lower-left	2 011 687,8, 6 063 764,3
Bounds: upper-right	2 012 059,5, 6 064 165,8
Total population	132,0
Average per cell	0,5
<b>Night result grid</b>	
Bounds: lower-left	2 011 687,8, 6 063 764,3
Bounds: upper-right	2 012 059,5, 6 064 165,8
Total population	0,0
Average per cell	0,0
<b>Motivating Graphics (polygon)</b>	
Last calculation	2024. 04. 25. 17:49:15
<b>Day result grid</b>	
Bounds: lower-left	2 011 702,6, 6 064 210,4
Bounds: upper-right	2 012 193,4, 6 064 671,4
Total population	5,0
Average per cell	0,0
<b>Night result grid</b>	
Bounds: lower-left	2 011 702,6, 6 064 210,4
Bounds: upper-right	2 012 193,4, 6 064 671,4
Total population	5,0
Average per cell	0,0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>PCE Paragon (polygon)</b>	
Last calculation	2024. 04. 25. 17:52:53
<b>Day result grid</b>	
Bounds: lower-left	2 012 550,3, 6 063 838,6
Bounds: upper-right	2 013 278,9, 6 064 552,4
Total population	18,0
Average per cell	0,0
<b>Night result grid</b>	
Bounds: lower-left	2 012 550,3, 6 063 838,6
Bounds: upper-right	2 013 278,9, 6 064 552,4
Total population	18,0
Average per cell	0,0
<b>VG Komárom Kft. (polygon)</b>	
Last calculation	2024. 04. 25. 17:55:44
<b>Day result grid</b>	
Bounds: lower-left	2 012 044,7, 6 064 448,3
Bounds: upper-right	2 012 520,5, 6 064 805,2
Total population	190,0
Average per cell	0,7
<b>Night result grid</b>	
Bounds: lower-left	2 012 044,7, 6 064 448,3
Bounds: upper-right	2 012 520,5, 6 064 805,2
Total population	190,0
Average per cell	0,7
<b>Kayser Automotive (polygon)</b>	
Last calculation	2024. 04. 25. 17:58:11
<b>Day result grid</b>	
Bounds: lower-left	2 012 223,1, 6 064 240,1
Bounds: upper-right	2 012 505,7, 6 064 567,3
Total population	325,0
Average per cell	1,7
<b>Night result grid</b>	
Bounds: lower-left	2 012 223,1, 6 064 240,1
Bounds: upper-right	2 012 505,7, 6 064 567,3
Total population	325,0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Average per cell	1,7
<b>Doktor24 (polygon)</b>	
Last calculation	2024. 04. 25. 18:03:06
<b>Day result grid</b>	
Bounds: lower-left	2 012 386,7, 6 064 165,8
Bounds: upper-right	2 012 535,4, 6 064 284,7
Total population	20,0
Average per cell	0,6
<b>Night result grid</b>	
Bounds: lower-left	2 012 386,7, 6 064 165,8
Bounds: upper-right	2 012 535,4, 6 064 284,7
Total population	20,0
Average per cell	0,6
<b>Agrotec (polygon)</b>	
Last calculation	2024. 04. 25. 18:03:06
<b>Day result grid</b>	
Bounds: lower-left	2 012 431,3, 6 064 225,3
Bounds: upper-right	2 012 758,5, 6 064 507,8
Total population	252,0
Average per cell	1,3
<b>Night result grid</b>	
Bounds: lower-left	2 012 431,3, 6 064 225,3
Bounds: upper-right	2 012 758,5, 6 064 507,8
Total population	252,0
Average per cell	1,3
<b>Racemark (polygon)</b>	
Last calculation	2024. 04. 25. 18:06:32
<b>Day result grid</b>	
Bounds: lower-left	2 012 580,0, 6 064 418,6
Bounds: upper-right	2 013 011,3, 6 064 805,2
Total population	197,0
Average per cell	0,6
<b>Night result grid</b>	
Bounds: lower-left	2 012 580,0, 6 064 418,6



## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Bounds: upper-right	2 013 011,3, 6 064 805,2
Total population	197,0
Average per cell	0,6

### BYD Electric Bus (polygon)

Last calculation	2024. 04. 25. 18:06:32
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#### Day result grid

Bounds: lower-left	2 012 862,6, 6 064 552,4
Bounds: upper-right	2 013 442,5, 6 065 043,2
Total population	388,0
Average per cell	0,7

#### Night result grid

Bounds: lower-left	2 012 862,6, 6 064 552,4
Bounds: upper-right	2 013 442,5, 6 065 043,2
Total population	388,0
Average per cell	0,7

### INZI CONTROLS HUNGARY Kft (polygon)

Last calculation	2024. 04. 25. 18:07:53
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#### Day result grid

Bounds: lower-left	2 013 026,1, 6 064 195,5
Bounds: upper-right	2 013 606,1, 6 064 760,6
Total population	162,0
Average per cell	0,2

#### Night result grid

Bounds: lower-left	2 013 026,1, 6 064 195,5
Bounds: upper-right	2 013 606,1, 6 064 760,6
Total population	162,0
Average per cell	0,2

### Egyéb cégek (polygon)

Last calculation	2024. 04. 25. 18:11:48
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#### Day result grid

Bounds: lower-left	2 013 249,2, 6 063 957,6
Bounds: upper-right	2 013 873,8, 6 064 478,0
Total population	20,0
Average per cell	0,0

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

<b>Night result grid</b>	
Bounds: lower-left	2 013 249,2, 6 063 957,6
Bounds: upper-right	2 013 873,8, 6 064 478,0
Total population	20,0
Average per cell	0,0
<b>FSK Hungary (polygon)</b>	
Last calculation	2024. 05. 02. 9:56:05
<b>Day result grid</b>	
Bounds: lower-left	2 011 851,3, 6 063 883,2
Bounds: upper-right	2 012 297,4, 6 064 344,2
Total population	28,0
Average per cell	0,1
<b>Night result grid</b>	
Bounds: lower-left	2 011 851,3, 6 063 883,2
Bounds: upper-right	2 012 297,4, 6 064 344,2
Total population	0,0
Average per cell	0,0
<b>Population polygon (polygon)</b>	
Last calculation	2024. 05. 02. 9:56:05
<b>Day result grid</b>	
Bounds: lower-left	2 012 074,4, 6 064 031,9
Bounds: upper-right	2 012 475,9, 6 064 448,3
Total population	19,0
Average per cell	0,1
<b>Night result grid</b>	
Bounds: lower-left	2 012 074,4, 6 064 031,9
Bounds: upper-right	2 012 475,9, 6 064 448,3
Total population	0,0
Average per cell	0,0
<b>SK Battery (polygon)</b>	
Last calculation	2024. 05. 02. 12:10:00
<b>Day result grid</b>	
Bounds: lower-left	2 010 706,3, 6 063 318,1
Bounds: upper-right	2 011 732,2, 6 064 195,4

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

Total population	1 154,0
Average per cell	0,6
Night result grid	
Bounds: lower-left	2 010 706,3, 6 063 318,1
Bounds: upper-right	2 011 732,2, 6 064 195,4
Total population	1 154,0
Average per cell	0,6
Other information	
Main program	RISKCURVES 12.2.0.23101
Last calculation	2024. 05. 02. 12:11:56
Last duration	0s 582ms

## Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)



## 21. Cumulation set: Enchem

Selection overview for Calculation set			
	Frequency [/year]	Max. distance [m]	Use
36,44 m3 dinamikus			
36,44 m3 dinamikus Set	6,91E-07	68	Yes
Alacsony hőm raktár 1.			
F3 Set	3,52E-06	1156	Yes
Alacsony hőm raktár 2.			
F3 Set	3,52E-07	1127	Yes
Csomagoló helyiség			
F3 Set	3,52E-07	362	Yes
Dinamikus BLEVE tartály			
Dinamikus Set	6,29E-07	127	Yes
Dinamikus lefejtő			
Dinamikus lefejtő Set	6,29E-07	57	Yes
Societal Risk ranking to Expected value			
Scenario		Contribution [%]	Value
1. Dinamikus Set (Dinamikus BLEVE tartály)		79,1	1,31E-05
2. F3 Set (Alacsony hőm raktár 1.)		19	3,14E-06
3. F3 Set (Alacsony hőm raktár 2.)		1,81	2,99E-07
4. F3 Set (Csomagoló helyiség)		0,05	8,27E-09
5. Dinamikus lefejtő Set (Dinamikus lefejtő)		0	0,00E+00
6. 36,44 m3 dinamikus Set (36,44 m3 dinamikus)		0	0,00E+00
Societal Risk ranking to contribution at max. guide ratio: N = 47 total frequency F = 2,77E-07			
Scenario		Contribution [%]	Value

Mennyiségi következményelemzés – a szoftveres modellezés eredményei (QRA)

1. Dinamikus Set (Dinamikus BLEVE tartály)	100	2,77E-07
2. 36,44 m3 dinamikus Set (36,44 m3 dinamikus)	0	0,00E+00
3. Dinamikus lefejtő Set (Dinamikus lefejtő)	0	0,00E+00
4. F3 Set (Alacsony hőm raktár 2.)	0	0,00E+00
5. F3 Set (Alacsony hőm raktár 1.)	0	0,00E+00
6. F3 Set (Csomagoló helyiség)	0	0,00E+00

Societal Risk ranking to contribution at user defined victims: N = 100 total frequency F = 0,00E+00		
Scenario	Contribution [%]	Value
1. Dinamikus lefejtő Set (Dinamikus lefejtő)	0	0,00E+00
2. Dinamikus Set (Dinamikus BLEVE tartály)	0	0,00E+00
3. 36,44 m3 dinamikus Set (36,44 m3 dinamikus)	0	0,00E+00
4. F3 Set (Alacsony hőm raktár 2.)	0	0,00E+00
5. F3 Set (Alacsony hőm raktár 1.)	0	0,00E+00
6. F3 Set (Csomagoló helyiség)	0	0,00E+00

Other information	
Main program	RISKCURVES 12.2.0.23101
Last calculation	2024. 05. 28. 10:49:58
Last duration	2s 882ms