



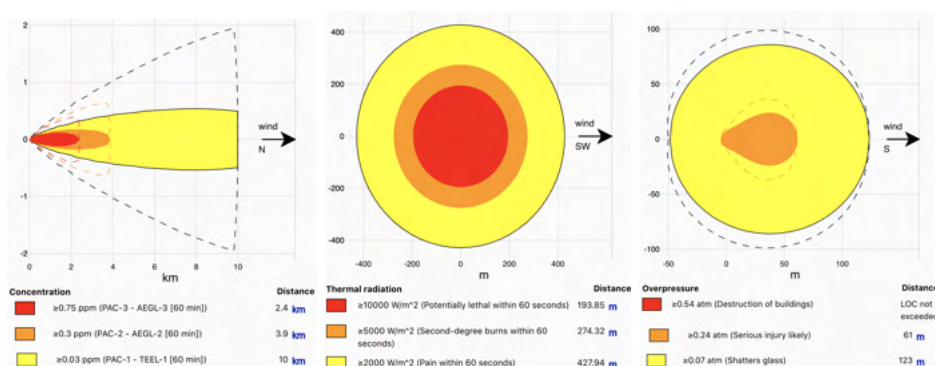
APPLICATION FACT SHEET

CERES (Chemical Emergency Response E-Service) is a cloud based emergency response decision support application design to be used before, during and after a chemical incident. It incorporates the US EPA CAMEO - ALOHA code as its modeling engine and runs on MS Windows, Mac OS, Android and iOS devices allowing users to use their response tool in or out of the office or in the field, anytime, anywhere and on any device.

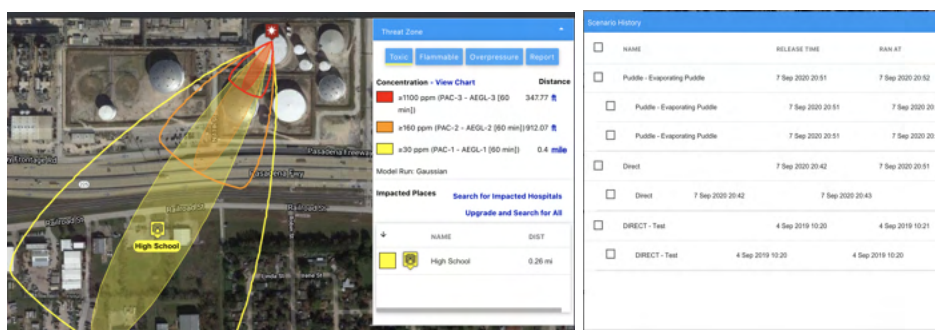
The application is offered in a base (no cost) configuration with all of the standard ALOHA modeling capabilities integrated with a Google Map interface. A Pro version is available as a cost effective solution for users needing to address a higher level of risk or the need for advanced emergency response capability, wide area mapping coverage, live internet weather, monitoring hardware integration, visual and audible alarms, automatic generation and assessment of impacted receptors, predefined scenarios, quick response mode when the chemical or release rate is unknown, historical data archiving and analysis, as well as improved collaboration and reporting tools.

CERES BASE

Full CAMEO ALOHA plume dispersion modeling capabilities including toxic gas clouds, flammable gas clouds, BLEVEs, jet fires, pool fires, vapor cloud explosions, building infiltration analysis and the following source strengths: Direct, Puddle, Tank, and Gas Pipe.



Google Maps base integration for displaying the threat zones and assessing the impacted manual receptors. Scenario history for managing current and past modeling runs, along with basic reporting surpassing ALOHA capabilities.

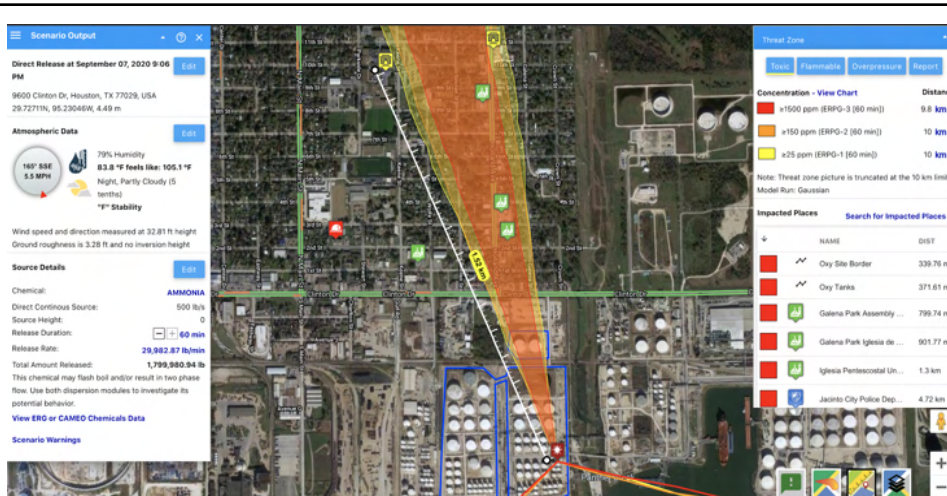




APPLICATION FACT SHEET

CERES PRO

Additional map functionality:
Live traffic, Street view, Live current location, Map ruler, Drawing tools, Google Places for automatic generation and assessment of impacted receptors; KML/KMZ and custom imagery (satellite imagery) import.



New ! - Blackline Safety Partnership and Integration

CERES integrates the real-time, location-enabled data from Blackline's G7 and G7 EXO portable gas detectors, for live monitoring, alarms management, data history, and for the new sensor driven plume module.

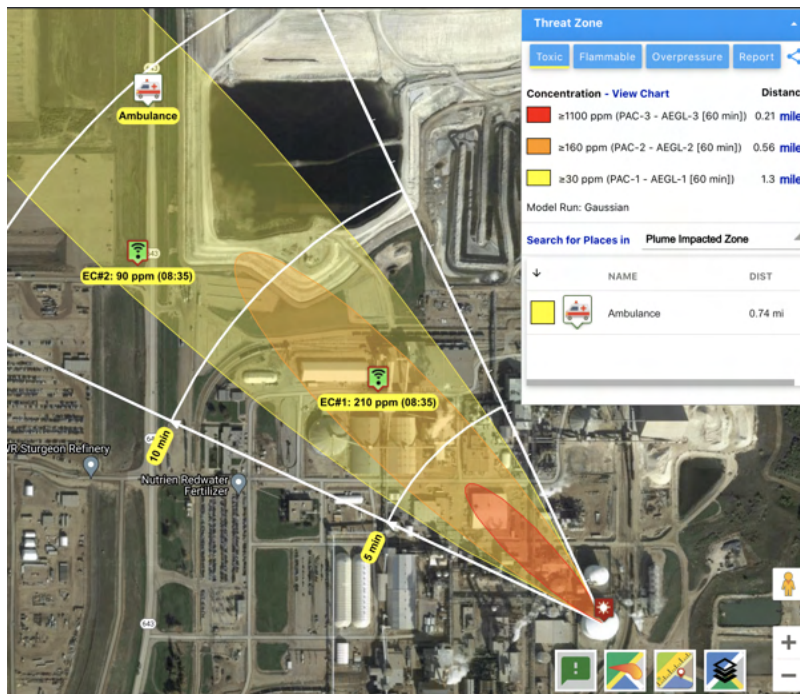




New ! - Sensors Driven Plume

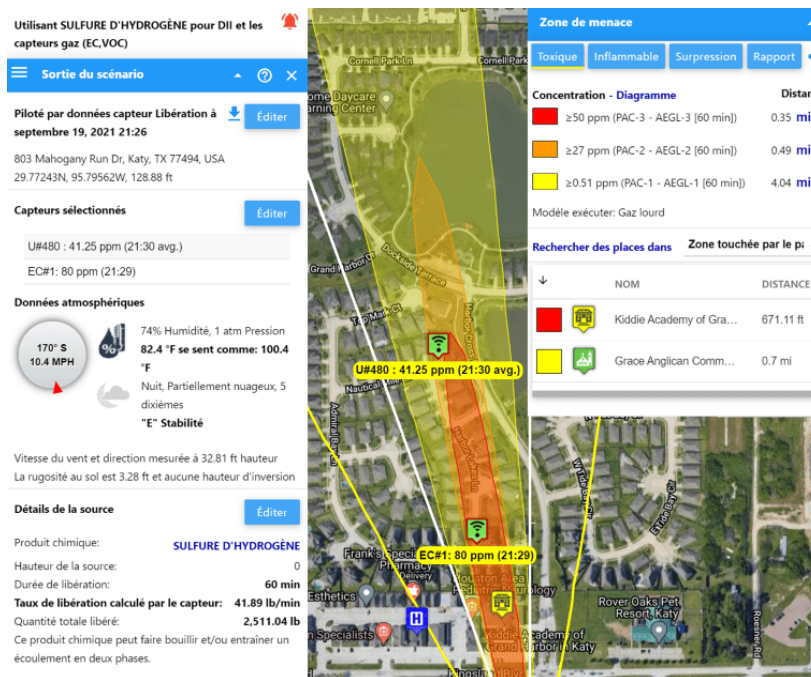
Use local gas sensors and meteorological data to plot an accurate gas plume based on real-world conditions.

The new sensor driven plume module bridges the gap of unknowns involved with plume modeling and makes it accessible to a wider range of emergency responders and situations.



New ! - Multi Language Support

CERES Pro comes preloaded with English and French language and can be configured for other languages on customer request.





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New ! - ERG 2020 Integration

Full ERG 2020 integration including BLEVE, IED and HAZMAT incidents.

Map visualization of the initial isolation distance, protective action distance, IED and BLEVE threat zones.

New ! - Upgrade to CERES Pro and get real time enhanced internet weather from IBM, live traffic, possible impacted points of interest, reports and custom IED and BLEVE distances.

Using AMMONIA for gas sensors (EC,LEL,VOC)

ERG Scenario Data

HAZMAT Incident at July 10, 2021 11:04

10933 Long Shadow Ln, Houston, TX 77024, USA
29.77041N, 95.50610W, 67.28 ft

Weather from Memorial Villages, Houston TX 77024 at July 10, 2021 11:04

163° SSE
1.9 MPH

Wind Direction 163 (SSE) Wind Speed Low (< 6 mph)

125 Ammonia, anhydrous
1005 (7664417 NH3)

Container Type

Rail tank car

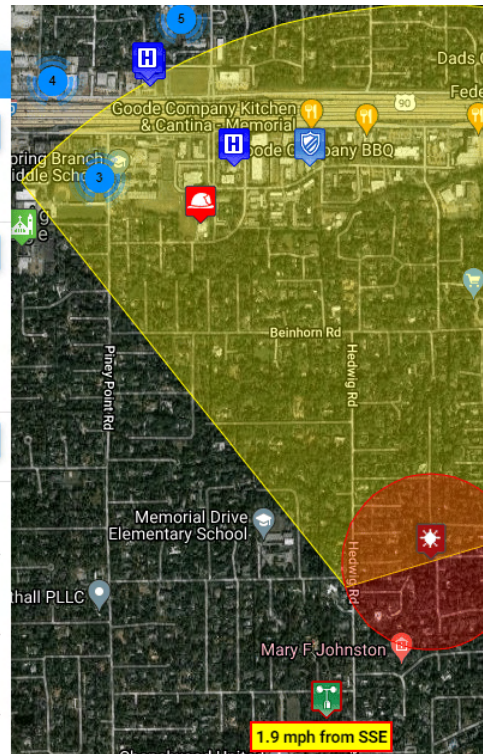
Time of Day

Day

Fire

No fire or not applicable

Continue with ALOHA scenario

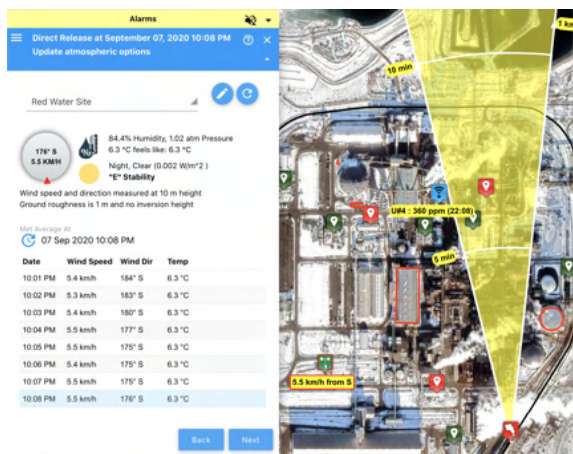


Access live meteorological data for modeling by selecting nearby internet weather stations or user provided local fixed or portable met stations and compare model results against gas sensor concentrations.

New ! - Enhanced Internet Weather by IBM

Real time weather data for any point in the world at a resolution of 2.5 miles / 4 km.

The technology uses an extensive earth based and satellite network to infer weather conditions on a point-by-point basis worldwide.



Red Water Site			
Red Water Site, 7 Sep 2020 22:08			
ELK ISLAND NAT PARK, ALTA - 22.65 km, 7 Sep 2020 21:00 (NMS - SYNOP)			
OLIVER AGDM, ALTA - 27.12 km, 7 Sep 2020 10:08 PM			
Date	Wind Speed	Wind Dir	Temp
10:01 PM	5.4 kmh	184° S	6.3 °C
10:02 PM	5.3 kmh	183° S	6.3 °C
10:03 PM	5.4 kmh	180° S	6.3 °C
10:04 PM	5.5 kmh	177° S	6.3 °C
10:05 PM	5.5 kmh	175° S	6.3 °C
10:06 PM	5.4 kmh	175° S	6.3 °C
10:07 PM	5.5 kmh	175° S	6.3 °C
10:08 PM	5.5 kmh	176° S	6.3 °C



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Predefined scenario library management; prioritized library highlighting “my chemicals”; extended chemical library (LPG, Gasoline, Formaldehyde) and chemical creation service.

New ! - Manage your Emission Source Library and Predefined Scenarios using associated zones, tags, and location. Share scenarios with other sites.

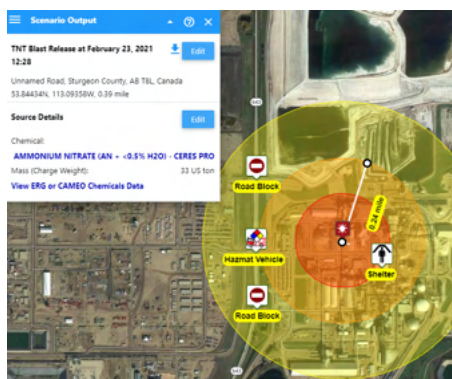
Nozzle Failure (Refrigerated Ammonia Tank)	Tank	AMMONIA	Refrigerated Ammonia Tank	14 Nov 2019 13:11	▶
Total Failure (Refrigerated Ammonia Tank)	Puddle	AMMONIA	Refrigerated Ammonia Tank	16 Nov 2019 18:52	▶
BLEVE (Ammonia Tanker)	Tank	AMMONIA		20 Nov 2019 20:27	▶
Fusible Plug Failure (Chlorine Tank)	Tank	CHLORINE	Chlorine Tank	14 Nov 2019 13:52	▶
BLEVE (Methane Tank)	Tank	METHANE	Methane Tank	17 Nov 2019 07:37	▶
Methane Pipe Leak	Gas Pipe	METHANE		30 Nov 2020 02:40	▶
Short Pipe Failure (Propane Tank)	Tank	PROPANE	Propane Tank	16 Nov 2019 20:07	▶

New ! - TNT Blast

Model solid explosives using a new TNT Blast Equivalent model that calculates blast-wave parameters based on the work of Kingery and Bulmash.

New ! - Tempest Station

Connect your Weatherflow Tempest meteorological station to the CERES Cloud in 60 seconds.



Creation and management of multiple areas of interests. Multi-users sharing the same area of interest, predefined scenarios.

Incident report / data sharing by email or incident link to facilitate scenario sharing and team collaboration.

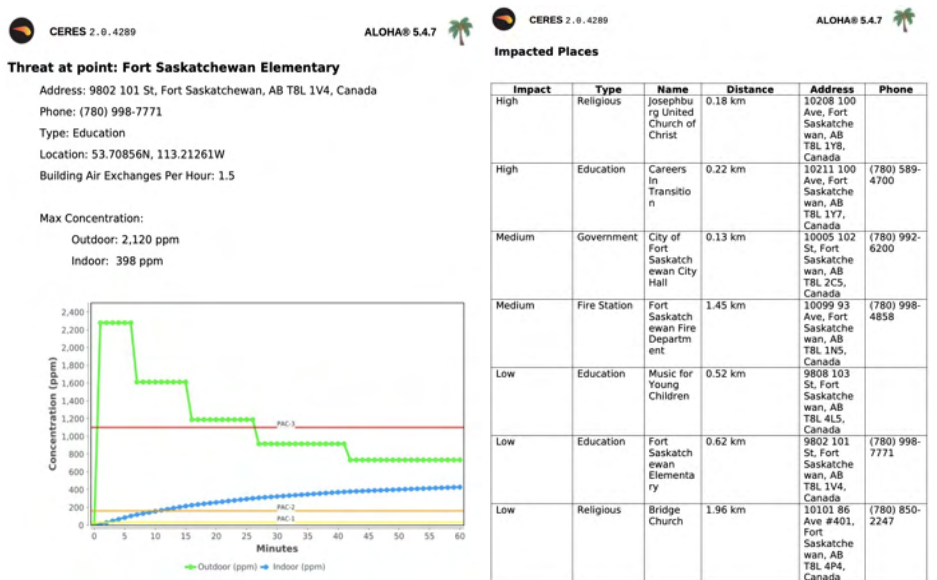


NAME	EMAIL	ROLE
<input type="checkbox"/> Cristian Stoichina	cstoichina@nutrien@vlahi.com	Company Manager
<input type="checkbox"/> Cristian Nutrien Runner1	cstoichina@nutrien_runner1@vlahi.com	DAQ
<input type="checkbox"/> Cristian Nutrien Runner2	cstoichina@nutrien_runner2@vlahi.com	Scenario Runner
<input type="checkbox"/> Ubuntu! DAQ For Redwater Alberta	cstoichina@daqredwater@vlahi.com	DAQ



APPLICATION FACT SHEET

Advanced reporting including impacted zone map imagery, impacted border, area and point receptors and KMZ impact zone export. Report option for infiltration analysis for multiple impacted receptors.



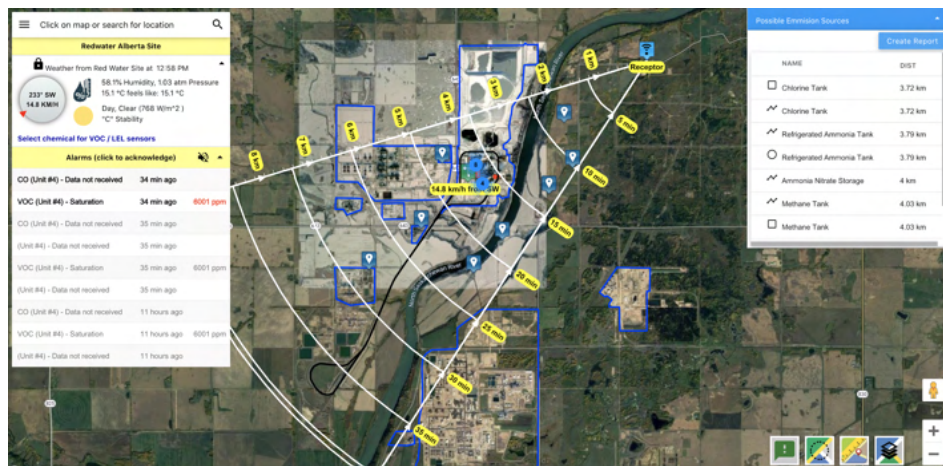
Monitor meteorological and fixed/mobile gas sensors data acquisition and display, Quick Response mode for immediate identification of receptors downwind from the event when the chemical or release rate is unknown as well as optimizing gas sensor deployment locations during an event. Visual and audible alarms.



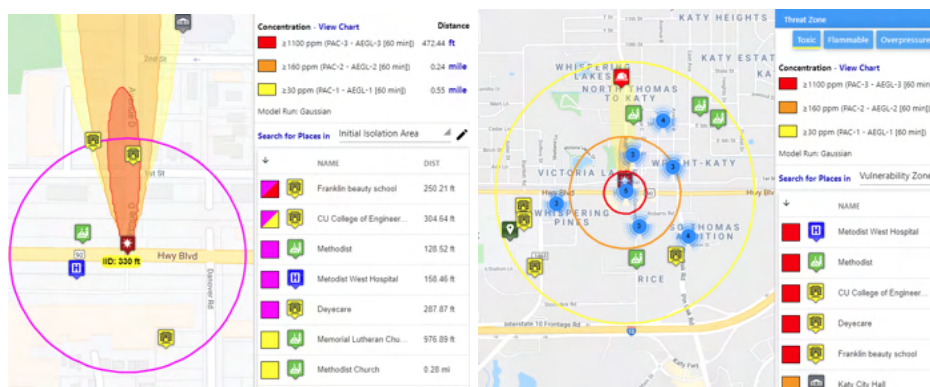


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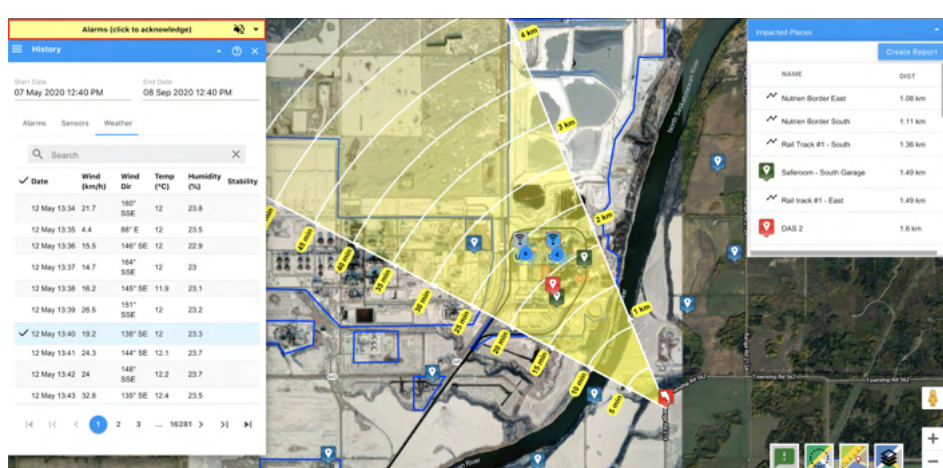
Fugitive Emission Corridor (upwind corridor) to help identify likely / possible emission sources to assist with odor complaint investigation, regulatory compliance and claims management.



New ! - Initial Isolation Distances (ERG 2020)
Analyze possible impact using Emergency Response Guidebook initial isolation distances and Methane pipeline association for public awareness distances table.



New ! - Vulnerability Zone
Analyze possible impact using vulnerability zones.



Meteorological and gas sensor historical data and alarm history archives, time interval reporting and meteorological wind rose.





APPLICATION FACT SHEET

Wide area map / system coverage to support running manual input and pre-defined scenarios for transportation emergency response. Run your scenarios anywhere in your country.

