

# Computer-Aided Management of Emergency Operations CAMEO Suite



## Origin

CAMEO initially was developed because NOAA recognized the need to assist first responders with easily accessible and accurate response information. Since 1988, EPA and NOAA have collaborated to augment CAMEO to assist both emergency responders and planners. CAMEO has been enhanced to provide emergency planners with a tool to enter local information and develop incident scenarios to better prepare for chemical emergencies. The Bureau of Census and the U.S. Coast Guard have worked with EPA and NOAA to continue to enhance the system.

## Why was CAMEO Created?

Rapid action by firefighter, police, and other emergency response personnel often is severely hampered by lack of accurate information on the substance spilled and safe response actions. Emergency planners lack a tool to store and easily use information that is essential for emergency planning.

## Who Uses CAMEO?

- Firefighters
- State Emergency Response Commissions (SERCs) and Tribal Emergency Response Commissions (TERCs)
- Local Emergency Planning Committees (LEPCs)
- Industry
- Schools
- Environmental Organizations
- Police Departments

## **What is in CAMEO®?**

CAMEO is actually a suite of three separate, integrated software applications:

### **CAMEO® - The Database and Information Management**

The original application, called CAMEO, contains a chemical database of over 6,000 hazardous chemicals, 80,000 synonyms, and product trade names. CAMEO provides a powerful search engine that allows users to find chemicals instantly. Each one is linked to chemical-specific information on fire and explosive hazards, health hazards, firefighting techniques, cleanup procedures, and protective clothing. CAMEO also contains basic information on facilities that store chemicals, on the inventory of chemicals at the facility (Tier II) and on emergency planning resources. Additionally, there are templates where users can store EPCRA information. CAMEO connects the planner or emergency responder with critical information to identify unknown substances during an incident.

### **MARPLOT® - Mapping Applications for Response, Planning, and Local Operational Tasks**

MARPLOT is the mapping application. It allows users to "see" their data (e.g., roads, facilities, schools, response assets), display this information on computer maps, and print the information on area maps. The areas contaminated by potential or actual chemical release scenarios also can be overlaid on the maps to determine potential impacts. The maps are created from the U.S. Bureau of Census TIGER/Line files and can be manipulated quickly to show possible hazard areas.

### **ALOHA® - Areal Locations of Hazardous Atmospheres**

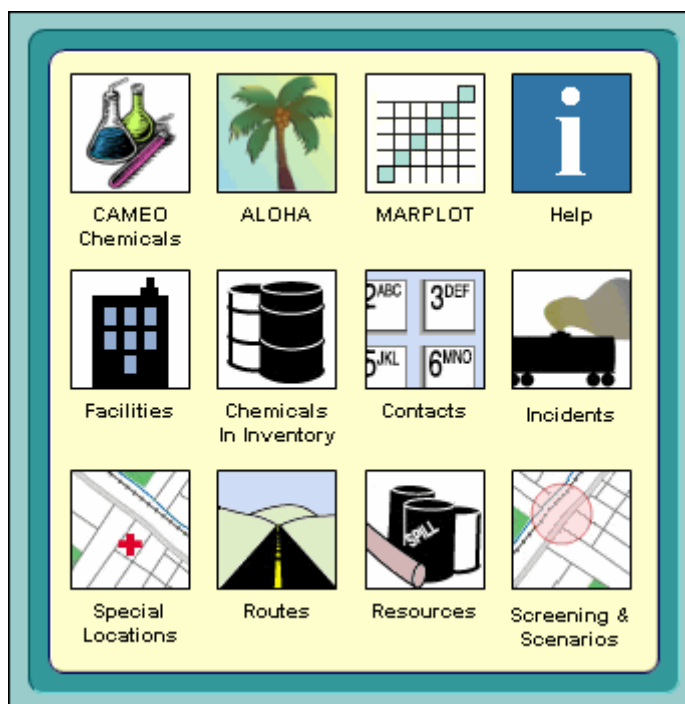
ALOHA is an atmospheric dispersion model used for evaluating releases of hazardous chemical vapors. ALOHA allows the user to estimate the downwind dispersion of a chemical cloud based on the toxicological/physical characteristics of the released chemical, atmospheric conditions, and specific circumstances of the release. Graphical outputs include a "cloud footprint" that can be plotted on maps with MARPLOT to display the location of other facilities storing hazardous materials and vulnerable locations, such as hospitals and schools. Specific information about these locations can be extracted from CAMEO information modules to help make decisions about the degree of hazard posed.

## CAMEO

CAMEO (Computer-Aided Management of Emergency Operations) is a set of software modules and programs designed to assist first responders and emergency planners

- Access chemical property and response information,
- Model potential chemical releases,
- Display results on a map, and
- Manage planning data.

The modules and programs work interactively to display critical information in an easy-to-understand manner. During a response to a chemical release, CAMEO can help decision makers quickly get the information they need for a safe, effective response.



CAMEO Home provides easy access to the CAMEO data management modules (such as Facilities and Contacts) and other programs in the CAMEO suite (CAMEO Chemicals, ALOHA, and MARPLOT).

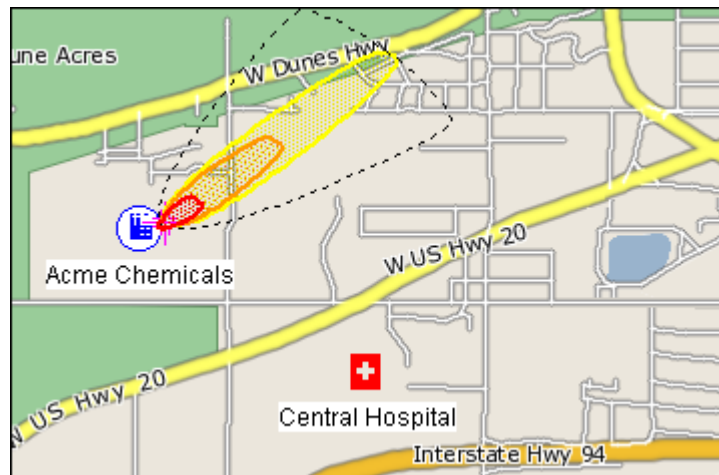
### Key Program Features

- **CAMEO Data Management Modules:** Keep track of information (such as the chemical inventories of facilities in your community) to assist in emergency response and planning. These modules are especially useful for data management tasks required under the Emergency Planning and Community Right-to-Know Act (EPCRA).
- **CAMEO Chemicals:** Search the CAMEO chemical database to find response recommendations (including firefighting and spill response) and physical properties (such as hazard alerts and vapor pressure) on thousands of chemicals. Use the reactivity prediction tool to predict what hazards could occur if chemicals in your collection mixed together.
- **ALOHA:** Estimate threat zones for hazardous chemical releases (toxic gas clouds, fires, and explosions). A threat zone is an area where a hazard (such as toxicity, flammability, thermal radiation, or damaging overpressure) has exceeded a user-specified Level of Concern (LOC).
- **MARPLOT:** Display ALOHA threat zones and other objects on a map. Map objects may include CAMEO Facilities and Special Locations (for example, hospitals and schools where there are populations of special concern).

## MARPLOT



MARPLOT is a mapping program. With MARPLOT's easy-to-use GIS interface, you can quickly create, view, and modify maps.



On this sample MARPLOT map, the basemap is set to the standard view, which includes items such as roads, cities, lakes, and national parks. Overlay objects (a chemical facility and a hospital) have been drawn on top of the map, and an ALOHA threat zone is also displayed.

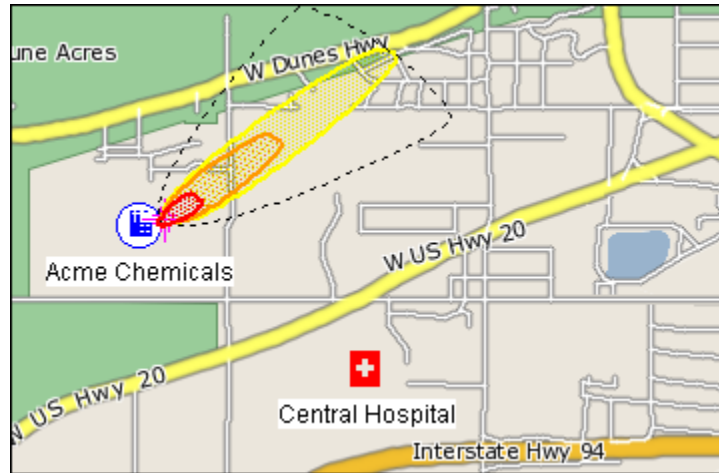
### Key Program Features

- Switch quickly between three basemaps: standard map files, aerial photos, and topographical maps.
- Get population estimates.
- Get information about basemap features.
- Link overlay objects to the [CAMEO](#) database program.
- Easily display [ALOHA](#) threat zones.
- Customize your view by drawing your own objects on the map and specifying which basemap layers are shown.

## ALOHA



ALOHA (Areal Locations of Hazardous Atmospheres) is a modeling program that estimates threat zones associated with hazardous chemical releases, including toxic gas clouds, fires, and explosions. A threat zone is an area where a hazard (such as toxicity, flammability, thermal radiation, or damaging overpressure) has exceeded a user-specified [Level of Concern \(LOC\)](#).



An ALOHA threat zone plot displayed on a MARPLOT map. The red, orange, and yellow zones indicate areas where specific Level of Concern thresholds were exceeded.

### Key Program Features

- Generates a variety of scenario-specific output, including threat zone plots, threat at specific locations, and source strength graphs.
- Calculates the rate of release for chemicals escaping from tanks, puddles (on both land and water), and gas pipelines and predicts how that release rate changes over time.
- Models many release scenarios: toxic gas clouds, BLEVEs (Boiling Liquid Expanding Vapor Explosions), jet fires, vapor cloud explosions, and pool fires.
- Evaluates different types of hazard (depending on the release scenario): toxicity, flammability, thermal radiation, and overpressure.
- Displays threat zones on MARPLOT maps (and on ArcView and ArcMap with the Arc Tool extensions).
- Works seamlessly with companion programs CAMEO Chemicals and MARPLOT; it can also be used as a standalone program.

CAMEO, MARPLOT, and ALOHA were developed jointly by NOAA and the Environmental Protection Agency (EPA), and they run on both Macintosh and Windows computers.