

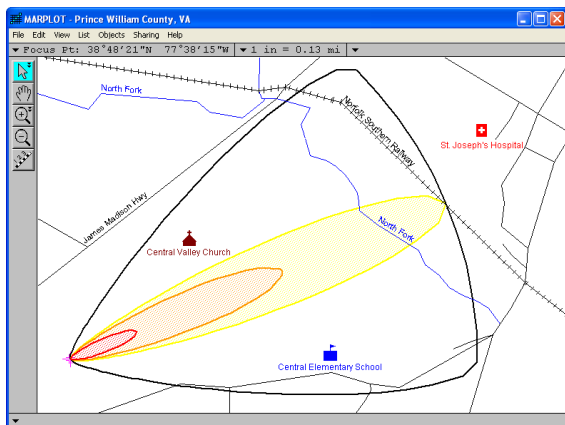
CAMEO®

Placing accurate, timely information in the hands of decision makers is vital to a safe, effective response to a chemical incident.

Computer-Aided Management of Emergency Operations (CAMEO) is an integrated set of applications designed to assist first responders and emergency planners. All modules work interactively to display critical information in an easy to understand fashion. CAMEO was developed jointly by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Environmental Protection Agency (EPA).

Key Program Features

- Database of over 6,000 hazardous chemicals.
- Chemical Reactivity Worksheet.
- ALOHA®, a modeling application that estimates threat zones associated with hazardous chemical releases, including toxic gas clouds, fires, and explosions; and
- MARPLOT®, a map display application.



ALOHA threat zones displayed on a sample MARPLOT map.

Critical Response Information

The Chemical Library module contains response recommendations for approximately 6,000 chemicals. The database also contains over 100,000 chemical synonyms and identification numbers, which aid emergency responders in identifying unknown substances during an incident.

Once a chemical is identified, CAMEO's Response Information Data Sheets (RIDS) provide physical properties, health hazards, information about air and water hazards, and recommendations for firefighting, first aid, and spill response.

Chemical Library				
Chemical Name				
CHLORINE				
Chemical Identification Information			Response Information Data Sheets	
Firefighting	Fire Hazards	Non-Fire Response	Health Hazards	Protective Clothing
General Description	Properties	Reactivity	Reactive Hazards	First Aid
Auto Ign Temp: Not flammable (USCG, 1999) Melting Point: -150° F (EPA, 1998) Vapor Pressure: 7600 mm Hg at 86° F (EPA, 1998) Vapor Density: 2.49 (EPA, 1998) Boiling Point: -30.3° F at 760 mm Hg (EPA, 1998) Molecular Weight: 70.91 (EPA, 1998)				

CAMEO Response Information Data Sheet showing the physical properties for chlorine.

Users can also add chemicals to the Reactivity Worksheet to virtually "mix" chemicals to determine what hazards could arise from accidental combinations.

CAMEO Chemicals

Chemical Reactivity

Substances In The Mix

1. ACROLEIN, INHIBITED
2. BENZOYL PEROXIDE

Hazard Predictions If These Chemicals Mix

- May form explosive peroxides.
- Heat generated from chemical reaction may initiate explosion.
- May become highly flammable or may initiate a fire, especially if other combustible materials are present.
- Exothermic reaction. May generate heat and/or cause pressurization.
- Exothermic, potentially violent polymerization. May cause pressurization.
- Combination liberates nonflammable, nontoxic gas. May cause pressurization.
- Reaction may be intense or violent.

A Reactivity Report generated using CAMEO Chemicals.

Now all of this critical response information is available online. On the CAMEO Chemicals Web site, users can search the extensive CAMEO Chemical Library, view the response data sheets, find out how chemicals could react if they mixed, and print customized reports. Visit CAMEO Chemicals at <http://cameochemicals.noaa.gov>.

ALOHA and Threat Zone Plots

ALOHA can provide an estimate of the potential downwind dispersion of a toxic cloud and some of the potential threats from chemical fires or explosions. Graphical outputs include threat zone plots, threat at specific locations, and source strength graphs.

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).

GIS-Compatible Output

ALOHA's threat zone plots can be displayed on electronic maps in MARPLOT. The user can compare the threat zone location with information concerning the location of facilities storing hazardous materials and special-concern populations such as hospitals, and schools, found in MARPLOT. Important data about these locations, such as emergency contacts, hours of operation, and potential affected population, can be displayed in CAMEO information modules to help with decisions about the degree of hazard posed by the incident.

Additionally, OR&R has developed extensions that allow users to import ALOHA's threat zone plots into ArcView and ArcMap. (To download either extension, go to http://response.restoration.noaa.gov/aloha_arctools.)

CAMEO International

CAMEO is used widely in the U.S., and it is also a major component of the United Nations Environment Programme's Awareness and Preparedness for Emergencies at the Local Level (APELL) program. CAMEO has been demonstrated or taught in 50 countries as part of the APELL workshops on community preparedness for chemical accidents. CAMEO has been translated into French and Spanish.

Getting CAMEO

To download any program in the CAMEO software suite free of charge, go to <http://www.epa.gov/emergencies/content/cameo/request.htm>. (CAMEO runs in Microsoft Windows® and on Apple Macintosh® computers.)

CAMEO Contact Information

For additional information:
<http://response.restoration.noaa.gov/cameo>
orr.cameo@noaa.gov
(206) 526-6317

NOAA's Office of Response & Restoration—Protecting our Coastal Environment

**For further information about NOAA's Office of Response and Restoration,
please call (301) 713-2989 or visit our Web site at
response.restoration.noaa.gov**

