ALOHA®

ALOHA (Areal Locations of Hazardous Atmospheres) is a freely available computer program designed especially for use by people planning for or responding to chemical releases. The ALOHA air dispersion model was originally developed to estimate how a toxic cloud might disperse after an accidental chemical release. Now ALOHA can also model threats from chemical releases that could result in fires or explosions.

ALOHA is designed to produce reasonable results quickly enough to be of use to responders during a real emergency. Therefore, ALOHA's calculations represent a compromise between accuracy and speed. Many of ALOHA's features were developed to quickly assist the responder. For example, ALOHA:

- Minimizes data entry errors by cross-checking the input values and warning the user if the input value is unlikely or not physically possible.
- Contains its own chemical library with physical properties for approximately 1,000 common hazardous chemicals so that users do not have to enter that data.

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, 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.
- Models the atmospheric dispersion of chemical spills on water.

How ALOHA Works

ALOHA is designed to be easy to use so that responders can use it during high-pressure situations. A series of dialog boxes prompt users to enter information about the scenario (e.g., chemical, weather conditions, terrain, and the release). Detailed help is provided with each dialog box. The scenario information and calculation results are summarized in a printable, text-only window. Once ALOHA's calculations are complete, users can choose to display a variety of graphical outputs.

Threat Zone Plots and Threat at a Point

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). ALOHA will display up to three threat zones on a single plot. The red threat zone represents the worst hazard.

The Threat at a Point feature displays specific information about hazards at locations of interest (such as schools or hospitals).

GIS-Compatible Output

ALOHA's threat zone plots can be displayed on electronic maps in MARPLOT®, another freely available program in the CAMEO® software suite.

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.)
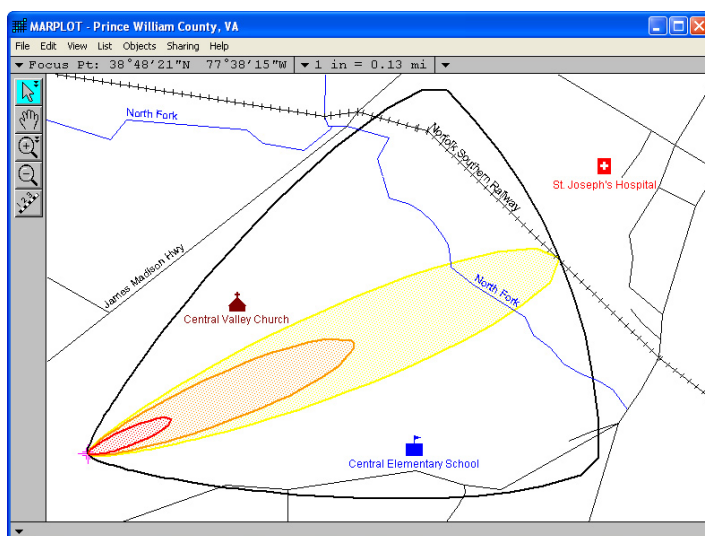
ALOHA threat zones displayed on a sample MARPLOT map (key locations of concern were added in MARPLOT).
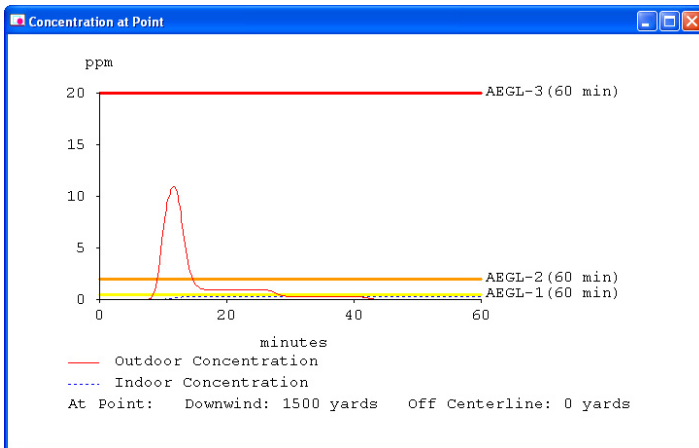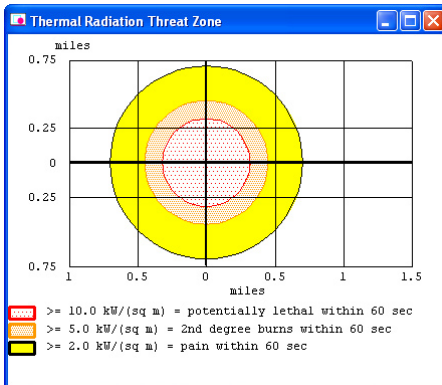
Getting ALOHA

To download ALOHA, go to
http://www.epa.gov/emergencies/content/cameo/aloha.htm.

ALOHA runs in Microsoft Windows® and on Apple Macintosh® computers.

ALOHA Contact Information

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

Some sample ALOHA output. At top, a threat zone plot for a BLEVE displays the thermal radiation threat zones. At bottom, a threat at a point graph shows the toxic concentration hazard at a specific location.

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