

# GASTAR

## Dense Gas Dispersion Model

*Risk Assessment, Land Use Planning,  
Emergency Response Planning,  
Management and Training*

Linked to a materials database

User friendly Windows interface

Input data validated on entry

Quick access to all modelling data from tabbed folders

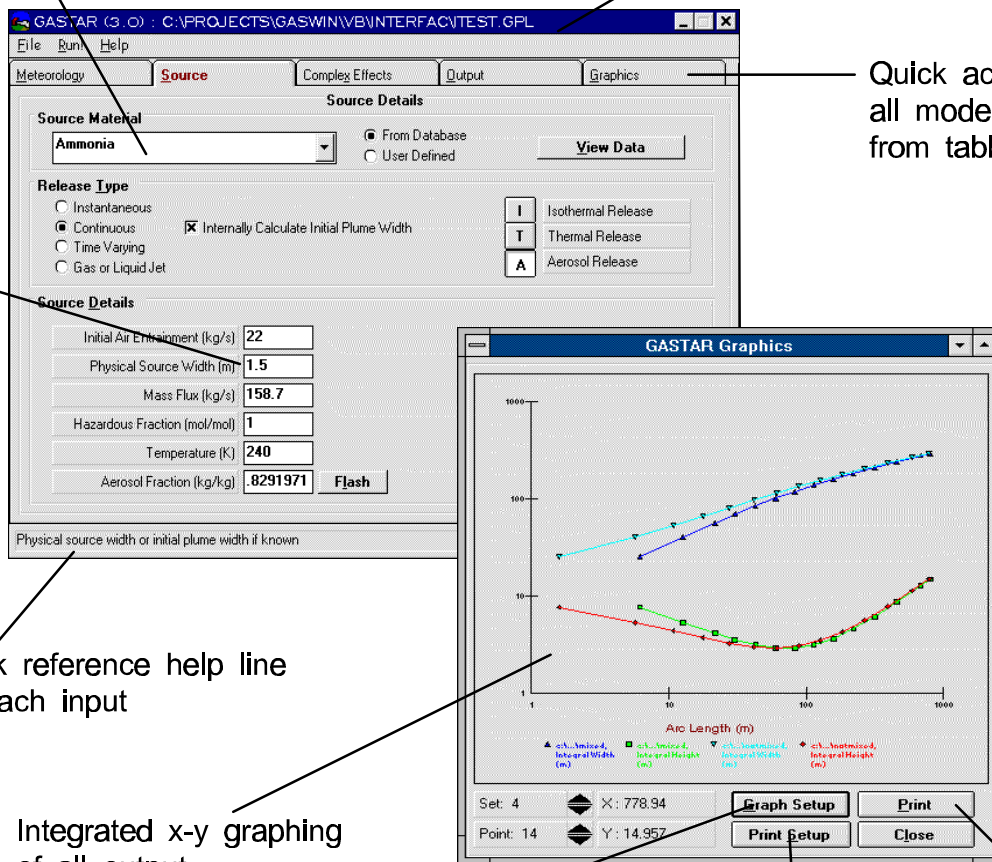
Quick reference help line for each input

Integrated x-y graphing of all output

Flexible graphics options with online help

Customisable graph printing settings

Print to any Windows supported printer



- ◆ Models cloud evolution from dense to passive
- ◆ Puffs, plumes and transient releases
- ◆ Two-phase jet source model
- ◆ Pool uptake model
- ◆ Complex effects - slopes and obstacles
- ◆ PC based Windows model - runs in seconds

**CERC**  
Environmental  
Software

### Meteorology

- ◆ Use of Monin Obukhov length or Pasquill Gifford stability categories.
- ◆ Other standard meteorological parameters used to characterise the atmospheric conditions.

### Source

- ◆ Select the released material from the database, or add your own.
- ◆ Choose from a selection of release types: puff, plume, transient, jet.
- ◆ Model Aerosol (flashing), Thermal or Isothermal releases.
- ◆ Optional calculation of effective plume width at the source.
- ◆ Inbuilt calculation of cloud evolution over an evaporating pool.
- ◆ Jet releases may be specified for any direction and height.
- ◆ Interfaces with CERC's comprehensive pool spill model LSMS

### Complex Effects

- ◆ Add rectangular and/or circular buildings.
- ◆ Include 2-dimensional (porous) fences.
- ◆ Model topography using simple slopes with piecewise constant properties (inclination, roughness length, wind speed).
- ◆ All buildings, fences and slopes may be orientated in any direction relative to the wind.

### Output

- ◆ Comprehensive output includes: concentration, dose, toxic load, cloud dimensions, temperature, position and concentration-time histories at any point.
- ◆ Output for GASTAR may be presented graphically with its integrated free floating graphics screen. A tabulated record of user input and all model output is also available.

### Validation and Verification

- ◆ Comparisons with standard field and laboratory data sets.
- ◆ Out performed other dispersion models in an independent study (available in published literature).

### Current Developments

- ◆ Chemicals with complex chemistry, eg HF
- ◆ Concentration contours
- ◆ Integration with GIS

### System Requirements

- ◆ Windows 3.1x or later.
- ◆ IBM compatible, 80386DX processor, minimum 4MB RAM, 10MB hard disk space, higher recommended.

### Model Development

- ◆ Developed by CERC, with sponsorship from the Health & Safety Executive.

