



Project Summary

Addendum to TUPOS— Incorporation of a Hesitant Plume Algorithm

D. Bruce Turner

This Project Summary was developed by EPA's Atmospheric Sciences Research Laboratory, Research Triangle Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

The existence of non-Gaussian plume behavior within the convective boundary layer has been pointed out and recently discussed at a national conference. In such cases the buoyant forces within the plume, although unable to penetrate the inversion, both resist downward motion and result in increased horizontal spreading. Because of its hesitancy for downwind dispersion, the author is using "hesitant plume" to refer to the above plume behavior. Briggs has suggested convective scaling parameterizations for surface crosswind integrated concentrations. Combined with parameterization of the crosswind spreading and assuming that the horizontal diffusion is Gaussian, allows estimation of concentrations on the horizontal plane. This addendum makes changes to the TUPOS model (Turner et al., 1986) in order to better account for buoyant plumes that bump against, but do not penetrate, the inversion layer at the mixing height. The resulting algorithm is TUPOS-2.0.

*The EPA author, **Bruce Turner** (also the EPA Project Officer, see below) is with Atmospheric Sciences Research Laboratory, Research Triangle Park, NC 27711.*

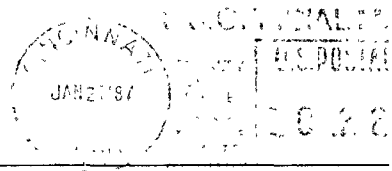
The complete report, entitled "Addendum to TUPOS—Incorporation of a Hesitant Plume Algorithm," (Order No. PB 86-241 031/AS; Cost: \$9.95, subject to change) will be available only from:

*National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650*

*The EPA Project Officer can be contacted at:
Atmospheric Sciences Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711*

United States
Environmental Protection
Agency

Center for Environmental Research
Information
Cincinnati OH 45268



Official Business
Penalty for Private Use \$300

EPA/600/S8-86/027

0000329 PS

U S ENVIR PROTECTION AGENCY
REGION 5 LIBRARY
230 S DEARBORN STREET
CHICAGO IL 60604