

# ANALGWST

**Model Uses** This model can be used to predict 1, 2, and 3-dimensional solute transport in groundwater based on the findings of E.J. Wexler.

**Major Categories** Hydrology and Water Use; Water Quality

**Subject Knowledge Level**  
Intermediate

**Minor Categories** Aquifers; Groundwater; Transport

**Technical Difficulty Level**  
Intermediate

**Model Type** Conceptual Model

**Geographic in Nature?**  
Semi

## **Abstract**

ANALGWST provides users with analytical solutions to the advective-dispersive solute-transport equation and are useful in predicting the fate of solutes in ground water. This program was developed based on literature by E.J. Wexler, and are provided for a variety of different types of systems and boundary conditions.

## **Future Developments**

Unknown

## **Model Limitations**

Unknown

## **Model Features**

- One-dimensional solute transport in a finite system;
- One-dimensional solute transport in a semi-infinite system;
- Two-dimensional solute transport in an infinite system with a continuous point source;
- Two-dimensional solute transport in a finite-width system with a finite-width solute source;
- Two-dimensional solute transport in an infinite-width system with a finite-width solute source;
- Two-dimensional solute transport in an infinite-width system with solute source having a Gaussian concentration distribution;
- Three-dimensional solute transport in an infinite system with a continuous point source;
- Point3 program modified to reproduce result as described in Wexler (1992a), page 49.
- Three-dimensional solute transport in a finite-width and finite-height system with a finite-width and finite-height source;
- Three-dimensional solute transport in an infinite-width and infinite-height system with a finite-width and finite-height source.

## **Required Data Types**

The program requires data on Advective Velocity, dispersion coefficients, spatial information, temporal information, and boundary concentrations.

Optional data may include a first-order solute-decay coefficient.

## **Model Outputs**

The model outputs the calculated concentrations at specified points in time and space.

A plotting option exists to view the output as graphs.

**Source**

US Geological Survey

**Source (URL)**

<http://water.usgs.gov/software/analgwst.html>

**Hardware Requirements**

AIRSLUG was written in Fortran 77 and generally installs easily on most computer systems. The code has been used on UNIX-based computers.

		<b>Supported Platforms</b>	
<b>DOS</b>	<input type="checkbox"/>	<b>UNIX</b>	<input checked="" type="checkbox"/>
<b>Windows</b>	<input type="checkbox"/>	<b>Macintosh</b>	<input type="checkbox"/>

**Software Requirements**

No additional software is required.

**Cost, Licensing and Availability**

Model is offered free of charge from USGS through the link provided above.