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Project Summary

PAL-DS Model: The PAL Model Including Deposition and Sedimentation User's Guide

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PAL is an acronym for an air quality model which applies a Gaussian plume diffusion algorithm to point, area, and line sources. The model is available from the U.S. Environmental Protection Agency and can be used for estimating hourly and short-term average concentrations of non-reactive pollutants at multiple receptors from several sources of each type. PAL is intended to assess the impact on air quality, on scales of tens of meters to several kilometers, of portions of urban areas such as shopping centers, large parking areas, and airports. Level terrain is assumed, and pollutant removal processes are ignored.

This report is a User's Guide to the PAL-DS model that utilizes Gaussian plume-type diffusion-deposition algorithms based on analytical solutions of a gradient-transfer model. The PAL-DS model can treat deposition of both gaseous and suspended particulate pollutants in the plume since gravitational settling and dry deposition of the particles are explicitly accounted for. The analytical diffusion-deposition expressions listed in this report are easy to apply and, in the limit when pollutant settling and deposition velocities are zero, they reduce to the usual Gaussian plume diffusion algorithms in the PAL model.

This report outlines the modifications of the PAL computer program to include deposition. The information is oriented to the model user and the programmer. This report is not a complete User's Guide to the PAL-DS model; it should be used as a supplement to the original User's Guide for PAL.

This Project Summary was developed by EPA's Environmental 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).

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The complete report, entitled "PAL-DS Model: The PAL Model Including Deposition and Sedimentation—User's Guide," (Order No. PB 83-117 739; Cost: $8.00, subject to change) will be available only from:
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