

PACKAGE ID - 001117IBMPC01 ORAMUS (DOS)

KWIC TITLE - Ozone Risk Assessment Utilities

AUTHORS - Whitfield, R.G.
Argonne National Lab., IL (United States)

Jusko, M.J.
Argonne National Lab., IL (United States)

Biller, W.F.
William F. Biller Consultants, East Brunswick, NJ
(United States)

LIMITATION CODE -UNL **AUDIENCE CODE** - UNL

COMPLETION DATE - 12/01/1998 **PUBLICATION DATE** - 12/01/1998

DESCRIPTION - ORAMUS is a user-friendly, menu-driven software system that calculates and displays user-selected risk estimates for health effects attributable to short-term exposure to tropospheric ozone. Inputs to the risk assessment are estimates of exposure to ozone and exposure-response relationships to produce overall risk estimates in the form of probability distributions. Three fundamental models are included: headcount risk, benchmark risk, and hospital admissions. Exposure-response relationships are based on results of controlled human exposure studies. Exposure estimates are based on the EPA's probabilistic national ambient air quality standards (NAAQS) exposure model, pNEM/Osub3, which simulates air quality associated with attainment of alternative NAAQS. Using ORAMUS, risk results for 27 air quality scenarios, air quality in 9 urban areas, 33 acute health endpoints, and 4 chronic health endpoints can be calculated.

PACKAGE CONTENTS - Media Directory; Software Abstract; ANL/DIS/TM-44, VOL.1; ANL/DIS/TM-44, VOL.2; Errata sheets (2 pages) Media Includes Source Code, Executables, Auxiliary Material, Object Module, Sample Problem Input and Output Data, DOS Text Help Files;

SOURCE CODE INCLUDED? - Yes

MEDIA QUANTITY - 3 3.5 Diskettes

METHOD OF SOLUTION - For a particular set of conditions (i.e., health endpoint, exertion level, exposure duration, geographical location, and air quality scenario, the k-fractile of the disk distribution is: $r_{sub\ k} = (RR_{sub\ k} \times P) - (rr_{sub\ k} \times 1_{underscore} \times P)$ where P is a vector (n x 1) of probabilities for n O sub 3 concentrations, rr sub k is the k-fractile response rate at 0.04 ppm and 1 underscore is the unit vector (1 x n). The last group of terms in the equations is a correction for response at background O sub 3 levels. This calculation is repeated 20 times for a total of 21 fractiles of a probability distribution.

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METHOD OF SOLUTION - (CONT)

COMPUTER - IBM PC

OPERATING SYSTEMS - ORAMUS has been run on DOS versions 5.1 and higher.
It will probably work on versions lower than 5.1.

PROGRAMMING LANGUAGES - QuickBASIC ver 7.00

SOFTWARE LIMITATIONS - Risk calculations are limited to the input files supplied with the system. Although the system can accommodate additional health endpoints and air quality scenarios, creation of the requisite input files is not straightforward and outside the scope of the system.

SOURCE CODE AVAILABLE (Y/N) - Y

UNIQUE FEATURES - ORAMUS is a unique software system for calculating risk results needed to support the U.S. EPA staff review of the ozone NAAQS.

OTHER PROG/OPER SYS INFO - The following explain some of the file naming conventions used in ORAMUS: .exe Executable files, .scn Screen files for menus and forms, .hlp Help files for menus and forms, .1o, .1p Exposure probability files for 1-h exposures at heavy exertion (acute effects), .2o, .2p Exposure probability files for 1-h exposures at moderate exertion (acute effects), .8o, .8p Exposure probability files for 8-h exposures at moderate exertion (acute effects), .sp Exposure probability files for seasonal exposures (chronic effects), .erf Exposure-response relationship files for headcount risk model, .hpr, .hor Risk output files for headcount risk models, .bmr Risk output files for benchmark risk models, .erp Exposure-response relationship files for benchmark risk model, .aqp Air quality probability files for benchmark risk model, .aqd Air quality data files for hospital admissions model, and .crf Concentration-response relationship files for hospital admissions model

HARDWARE REQS - There are no special hardware or software requirements.

TIME REQUIREMENTS - Execution time for a single case (i.e., choice of urban area, health endpoint, air quality scenario, population of interest) is only a few seconds. However it is advisable to produce headcount risk results for large groups of cases (e.g., do all cities and all air quality scenarios for 1-h endpoints at heavy exertion; then do all 1-h endpoints at moderate exertion; etc.). It will take several hours to complete each group of cases because of the large number of combinations of conditions that can be specified at one time. Results can then be instantaneously viewed at a later time.

REFERENCES - R.G. Whitfield, M.J. Jusko, and M.A. Clemmons, Ozone Risk assessment Utilities (ORAMUS) User's Manual and Tutorial: Volume

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REFERENCES - (CONT) 1, Acute Health Endpoints, ANL/DIE/TM-44, Vol.1, December 1998; R.G. Whitfield, M.J. Jusko, and M.A. Clemmons, Ozone Risk Assessment Utilities (ORAMUS) User's Manual and Tutorial: Volume 2, Chronic Health Endpoints, ANL/DIS/TM-44, Vol.2, December 1998.

ABSTRACT STATUS - Released AS-IS 10/13/1999.

SUBJECT CLASS CODE - RY

KEYWORDS -
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O CODES
AIR QUALITY

EDB SUBJECT CATEGORIES -
990200

SPONSOR - DOE/ER

PACKAGE TYPE - AS - IS