

Computer Models For Fire and Smoke

<i>Model Name:</i>	CONTAMW
<i>Version:</i>	1.0
<i>Classification:</i>	Airflow Model
<i>Very Short Description:</i>	A network model is used to predict pressure differences and airflows between compartments in a building.
<i>Modeler(s), Organization(s):</i>	George N. Walton, National Institute of Standards and Technology
<i>User's Guide:</i>	CONTAMW 1.0 User Manual, Multizone Airflow and Contaminant Transport Analysis Software, NISTIR 6476
<i>Technical References:</i>	George N. Walton, Airflow Network Models for Element-Based Building Airflow Modeling, <i>ASHRAE Transactions</i> , Vol. 95, Pt. 2 (1989) W. Stuart Dols, George N. Walton, Kevin R. Denton, CONTAMW 1.0 User Manual, NISTIR 6476, (2000)
<i>Validation References:</i>	Craig P. Wray, Gren K. Yuill, An Evaluation of Algorithms for Analyzing Smoke Control Systems, <i>ASHRAE Transactions</i> , Vol. 99, Pt. 1 (1993).
<i>Availability:</i>	Program and PDF format user manual available from http://www.bfrl.nist.gov/863/contam/ .
<i>Price:</i>	No cost.
<i>Necessary Hardware:</i>	Current Intel Pentium (or equivalent) computers will provide sufficient speed and memory. The program runs under Windows 95, 98, and NT operating systems.
<i>Computer Language:</i>	C

Size: Data file sizes range from about 10Kb for simple buildings up to about 1Mb for very complex ones.

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Detailed Description:

CONTAM is a product of the Building and Fire Research Laboratory's Indoor Air Quality and Ventilation group. The IAQ calculation requires the evaluation of inter-compartment airflows and pressure differences. A similar evaluation of flows and pressures was performed by NIST's ASCOS (Analysis of Smoke Control Systems) program. CONTAM's evaluation is faster, computationally more reliable, and capable of handling arbitrarily large and complex problems. Its graphical user interface aids the user in describing those complex problems. The user draws a floor plan of each level of the building and graphically locates the flow openings between rooms, between floors, and between the rooms and the outside. The computed flows and pressure differences are displayed on the floor plan sketches and are written to files. A similar output form is available for shafts to help design a common form of smoke control system.

Predecessor DOS programs CONTAM93 and CONTAM96 have been used by engineering firms as a successor to ASCOS. As an example of its use by practicing engineers on a very large and complex problem, CONTAM96 was used to analyze various fire safety issues related to planned renovations of the World Trade Center in New York City.