

CHERURB (Chalk River Environmental Research Branch Urban Contamination and Dose Model)

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Urban Areas Working Group
Countermeasures scenario

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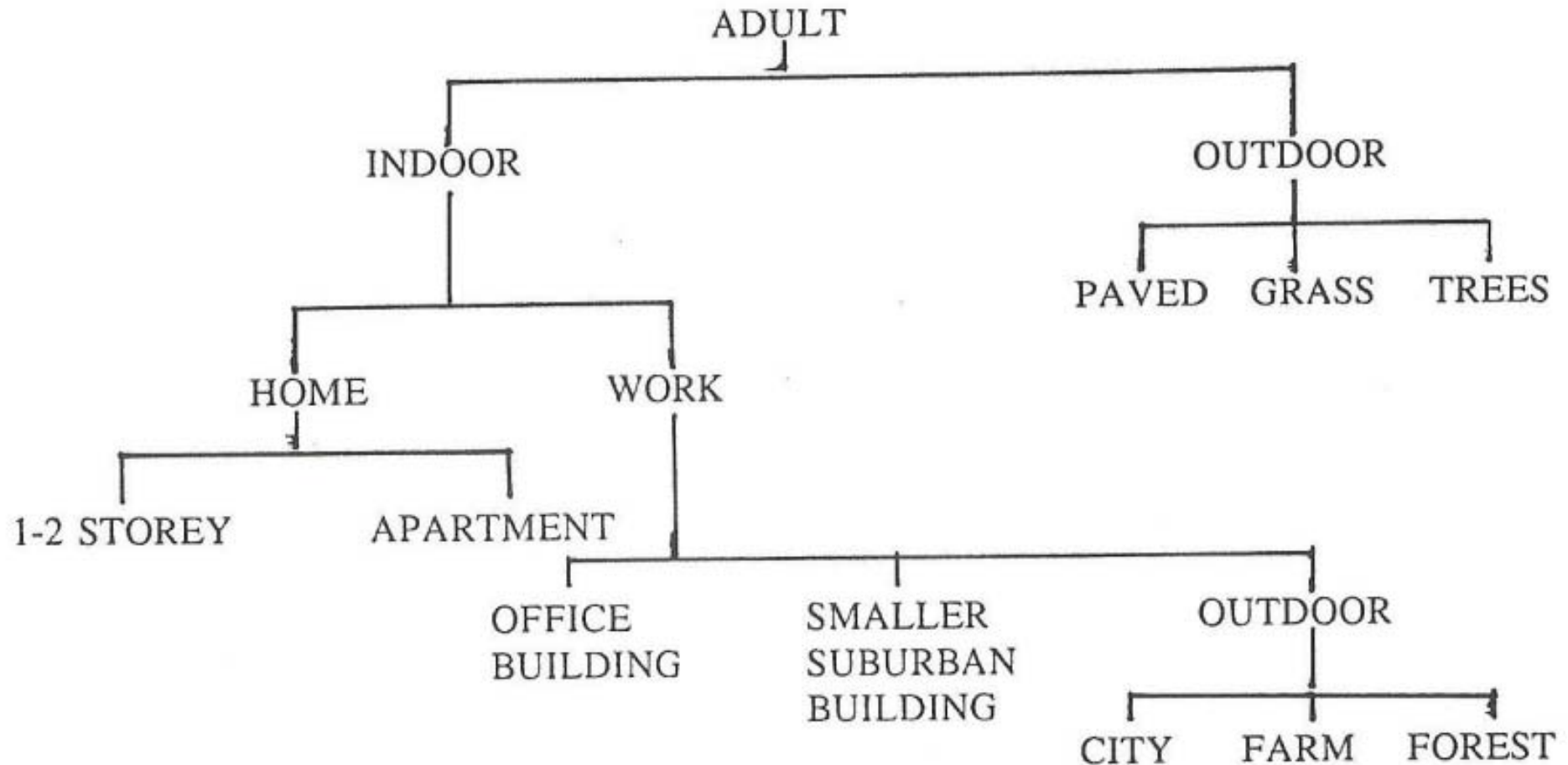
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Introduction to CHERURB

- CHERURB is a time-dependent code used for assessing an impact of an accidental atmospheric release of Cs-134, Cs-137, Ru-103, Ru-106, or I-131 in the vicinity of a city
- Calculates inhalation, immersion, and groundshine doses during the plume passage, and doses from deposited activity years after
- Calculates dose to an adult, child (age 10) and infant (age 1) at indoor as well as outdoor locations
- It predicts best estimate and 95% confidence interval
- Capable of calculating reduction in dose due to weathering and decontamination processes
- Helps estimating cost-effectiveness of dose reduction measures

Example of Lifestyle and Building Characteristics Modeled by CHERURB



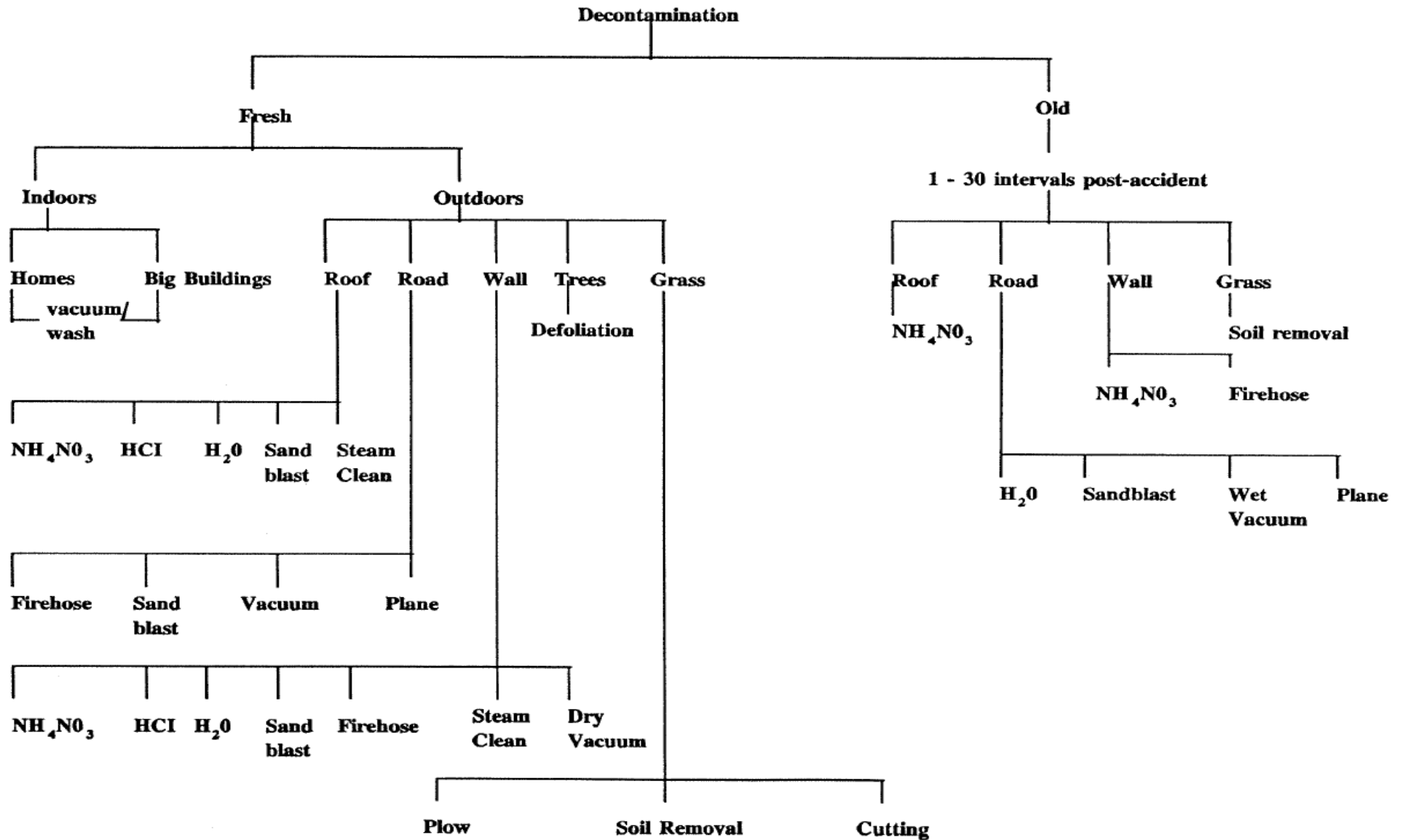
Model Details

- Models elemental, organic and particulate forms for Iodine
- Handles various building sizes (single-family house, pre-fabricated house, semi-detached house, townhouse, apartment house, workplace and school) and outdoor
- Models basement to fifth floor, attic, outside (front, side, back, street and courtyard) locations
- Models dry and wet deposition on five surfaces (roof top, walls, roads, lawn, trees)
- Models fresh and old deposition, and fixation of the contaminants
- Handles rain using surface type-specific parameters values (e.g. run-off occurs after certain critical amount of precipitation)

Inputs

- Preferred starting point is air concentration and precipitation data
- Can start from measured deposition on any surface
- Fraction of time an adult, child and infant spent in different locations (Toronto specific data already in the code)
- It uses many general and nuclide specific parameters
- Dimensions of the rooms
- Decontamination information
- Distributions for input parameters (normal, lognormal, uniform, triangular, and user specific) and correlation coefficients between them

Decontamination Processes



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