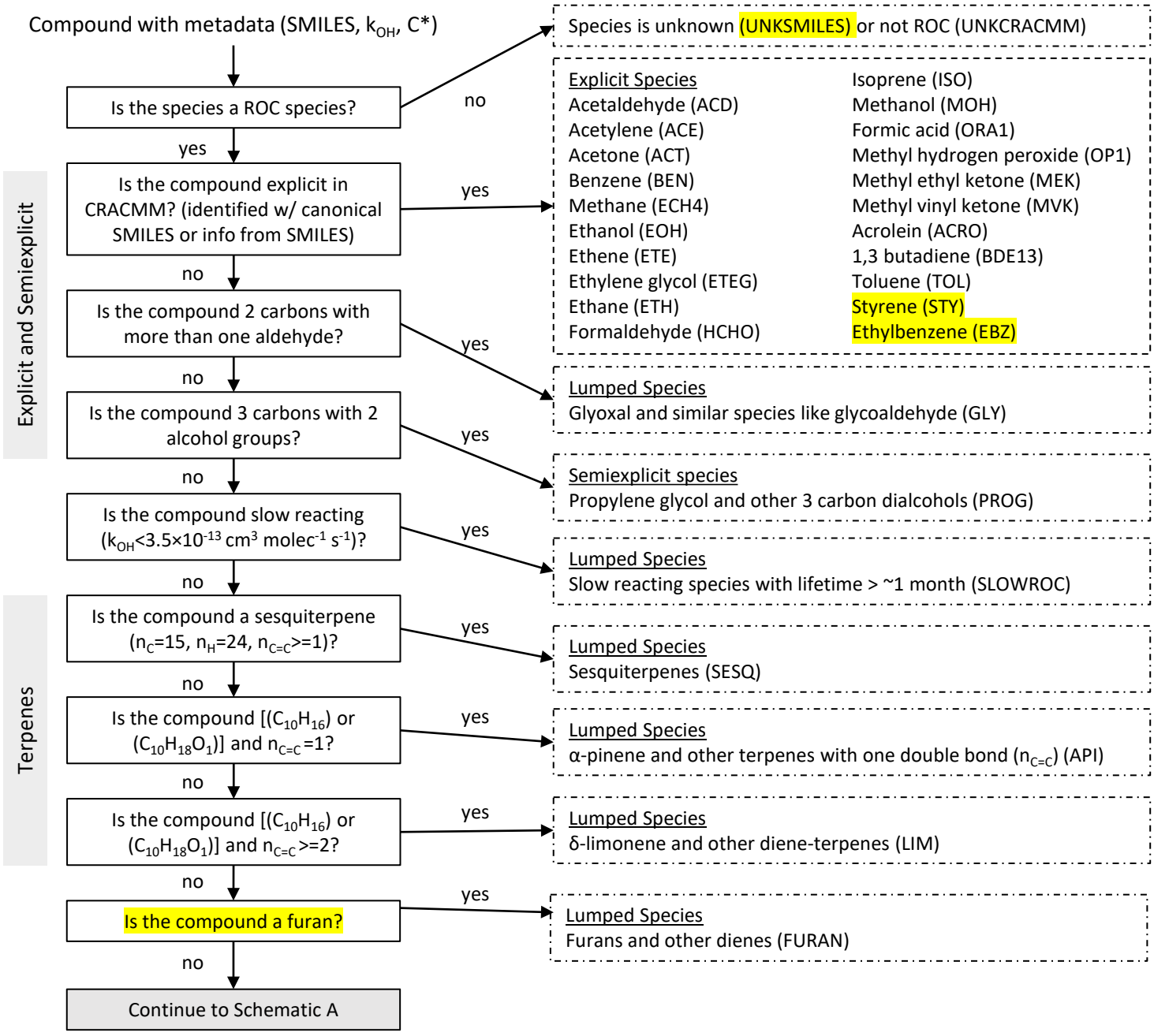
CRACMMv2.0 Emissions Mapping, Updated 8/5/2024

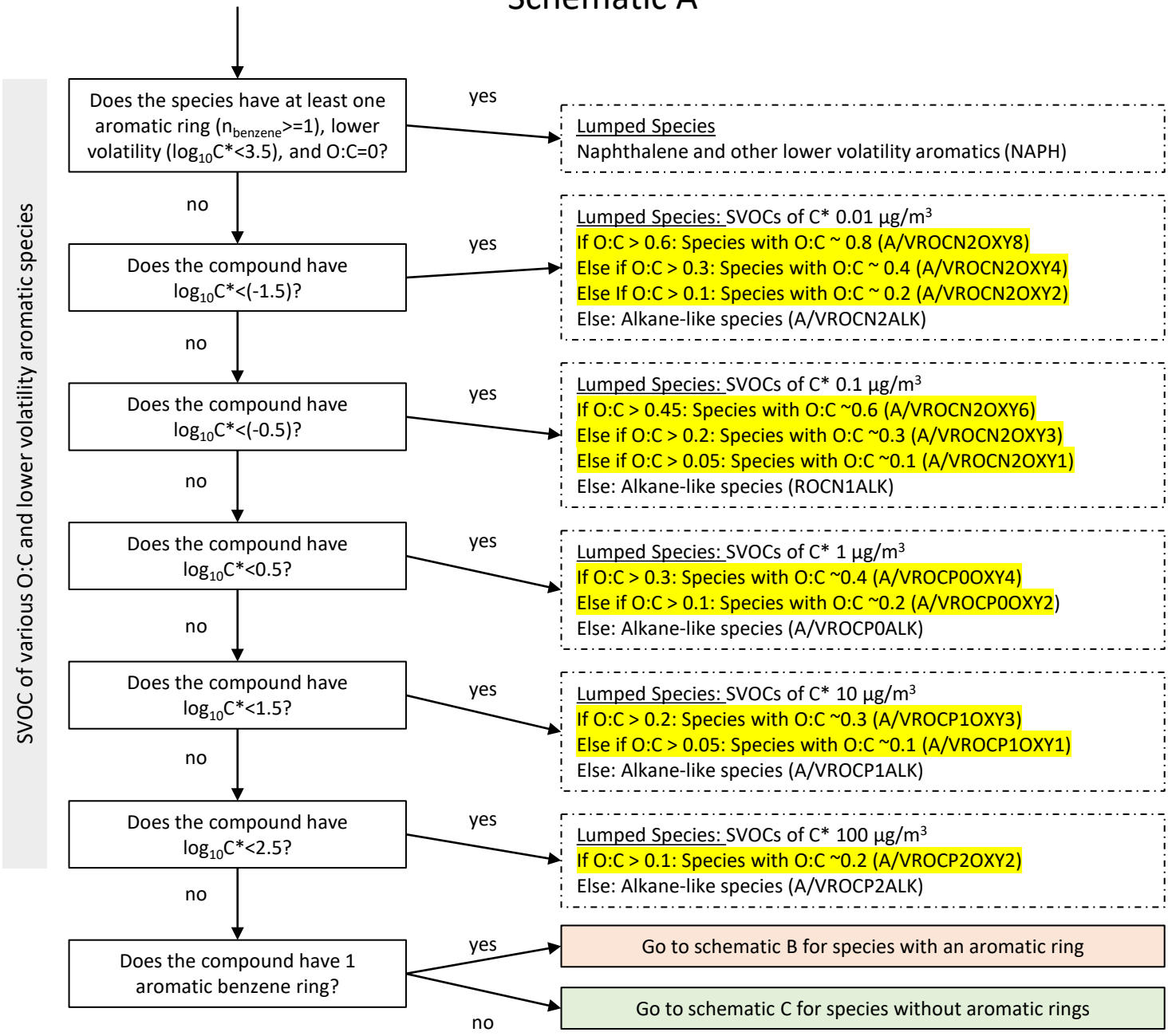


Major updates to the cracmm mapper for CRACMM2 highlighted in yellow

See Skipper et al. 2024 (https://doi.org/10.5194/egusphere-2024-1680) for more information on CRACMM2.

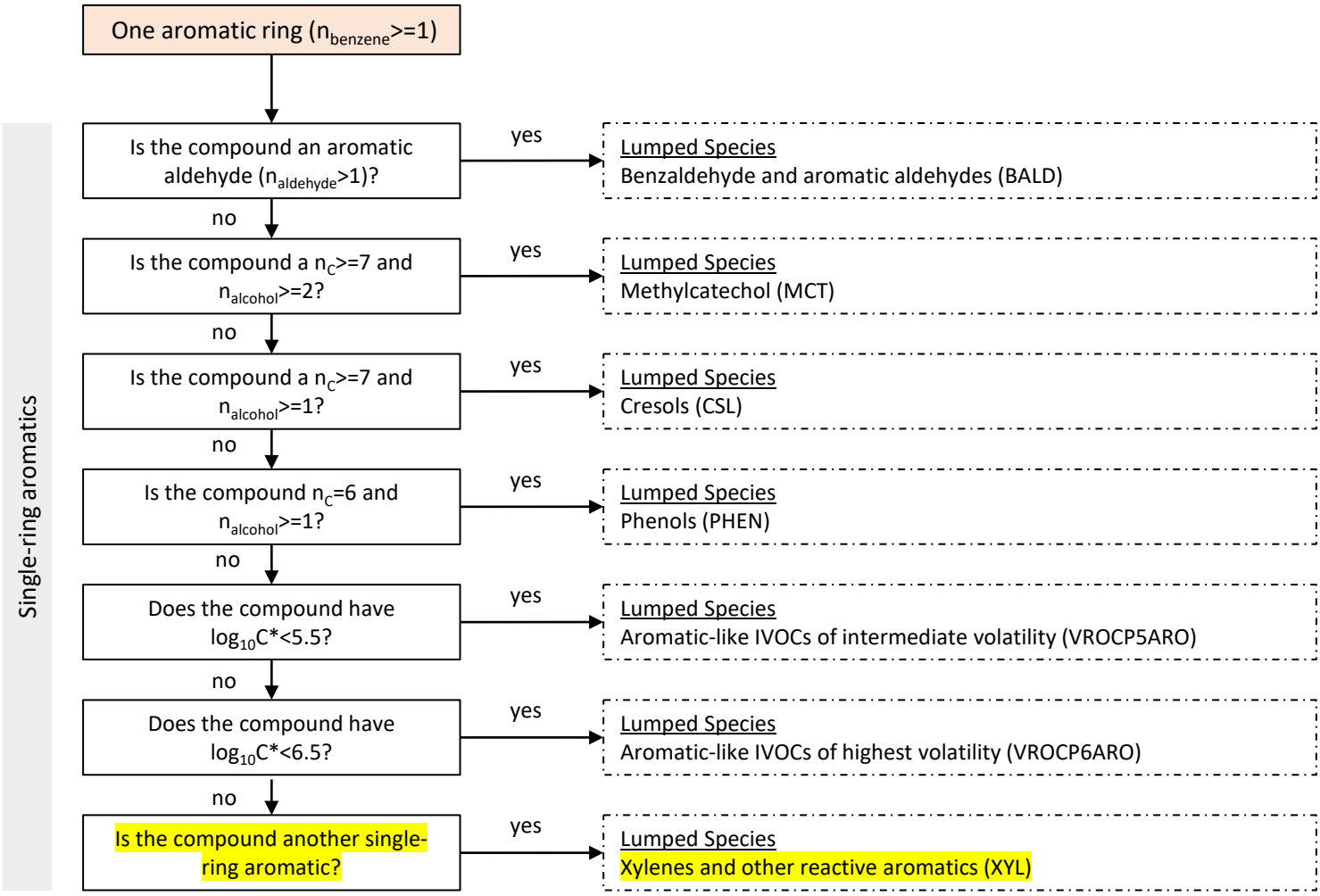
CRACMMv2.0 Emissions Mapping, Updated 8/5/2024

Schematic A



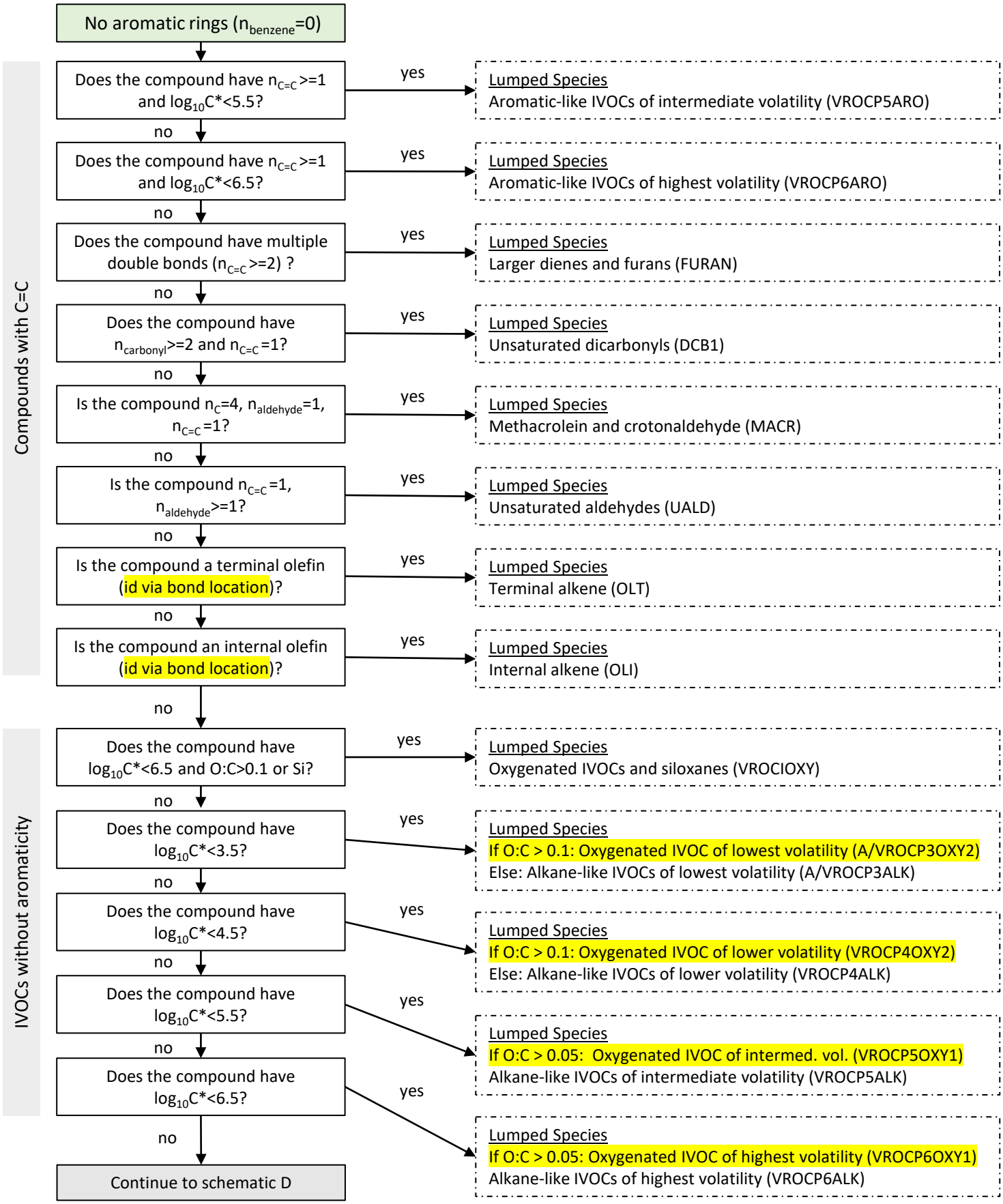
CRACMMv2.0 Emissions Mapping, Updated 8/5/2024

Schematic B

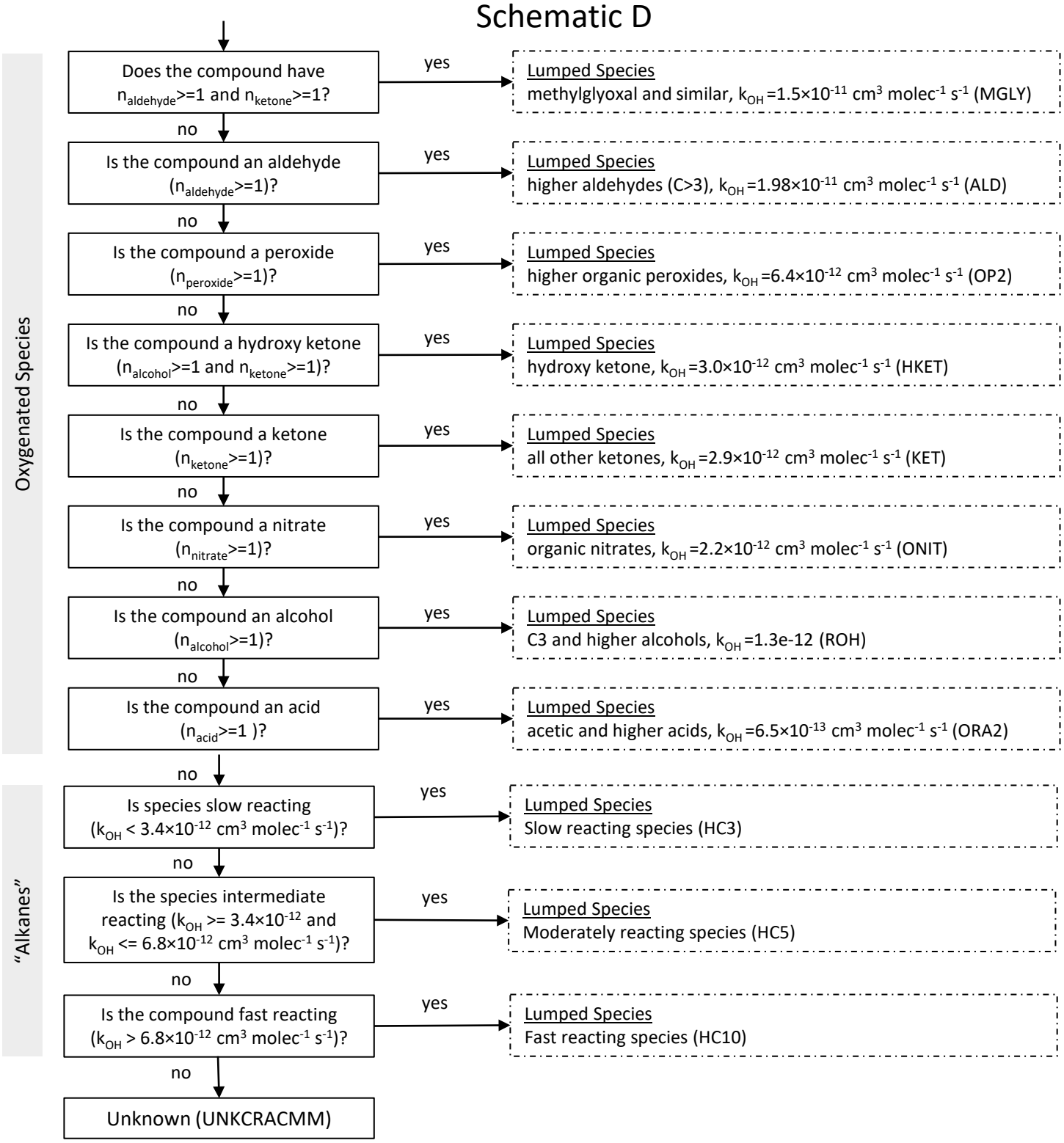


CRACMMv2.0 Emissions Mapping, Updated 8/5/2024

Schematic C



CRACMMv2.0 Emissions Mapping, Updated 8/5/2024
Schematic D



The CRACMM2 emission mapper includes some other updates for robustness that could result in small changes to mapped compounds. Some species can exist in a gas (V) or aerosol (A) phase. The python mapper includes an optional argument to label a species as gas or particle if two phases are possible . The user must specify the phase which can be calculated outside the mapper based on C* outside the mapper.

C* are always in μg m^{-3} in this diagram.
Unknowns may be of 3 types:

- UNKKOH: unknown k_{OH} (correct by specifying better surrogate).
- UNKSMILES: unknown SMILES (correct by specifying better surrogate).
- UNKCRACMM: unknown in mapping. All ROC species eventually get classified by k_{OH}, but species that do not have any carbon atoms or are elemental carbon do not get mapped.

RACM2 SI: https://ars.els-cdn.com/content/image/1-s2.0-S1352231012011065-mmc1.pdf
CMAQ Implementation of RACM2:
https://github.com/USEPA/CMAQ/blob/master/CCTM/src/MECHS/mechanism_information/racm2_ae6_aq/mech_racm2_ae6_aq.md