CornellEngineering

Civil and Environmental Engineering

CEE 4540

Sustainable municipal drinking water treatment

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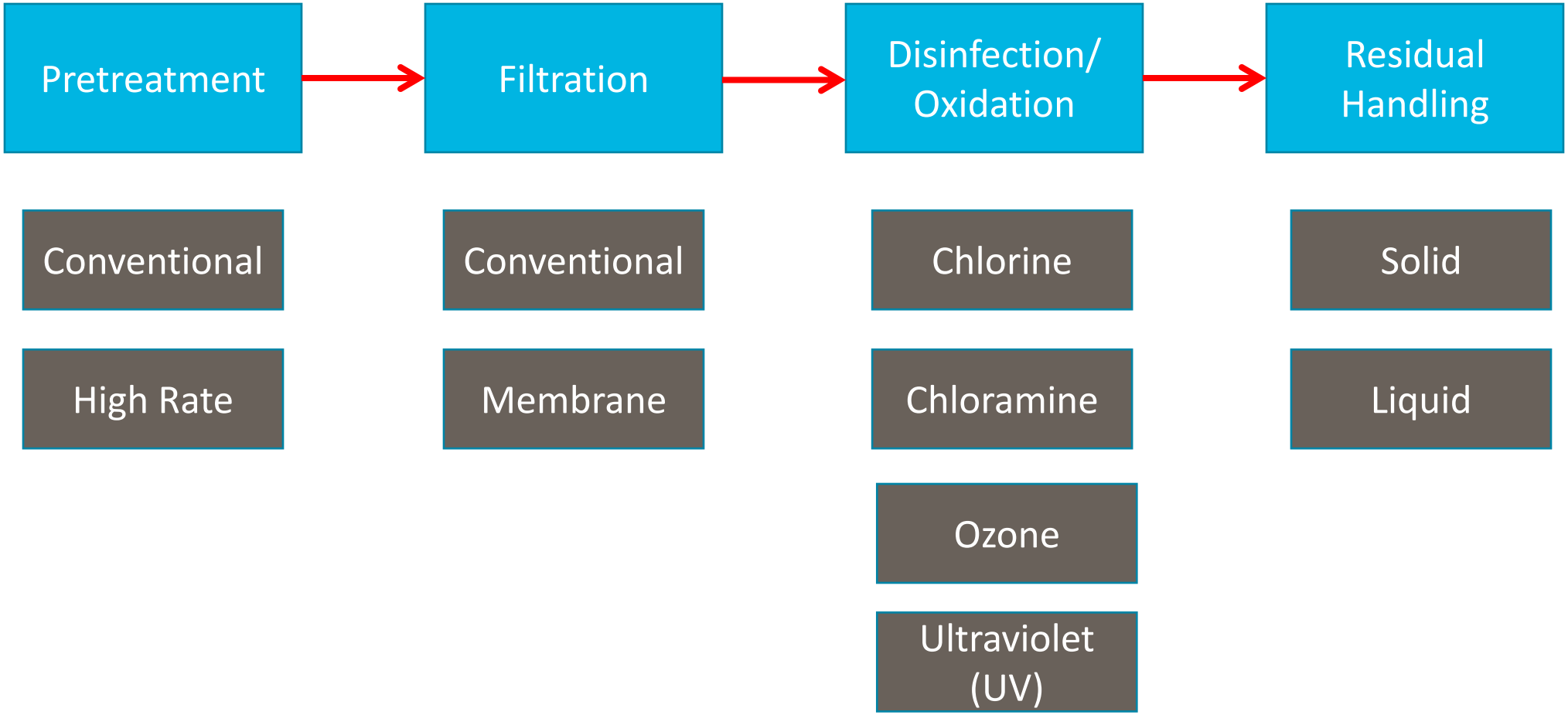
Class #10 10/01/2018 2:55 – 4:10pm

Major Building Blocks for Water Treatment Process



Special Treatment Considerations

- Trace/Emerging Contaminants
  - Granular Activated Carbon
  - Ion Exchange
- Distribution System Corrosion

Steps for Water Treatment Process Design

- Step 1. Analyze Water Quality and establish treatment objectives based on:
  - Primary MCL
  - Secondary MCL
    - Color; Taste & Odor
  - Distribution System Corrosion Control
    - pH, Alkalinity, Phosphate (addition), disinfection by-product formation
- Step 2. Identify treatment processes/technologies that can be used to achieve each of the treatment goals or objectives
  - There could be multiple technologies suitable for one treatment objective
  - Pros & Cons analysis would be evaluated to justify process selection

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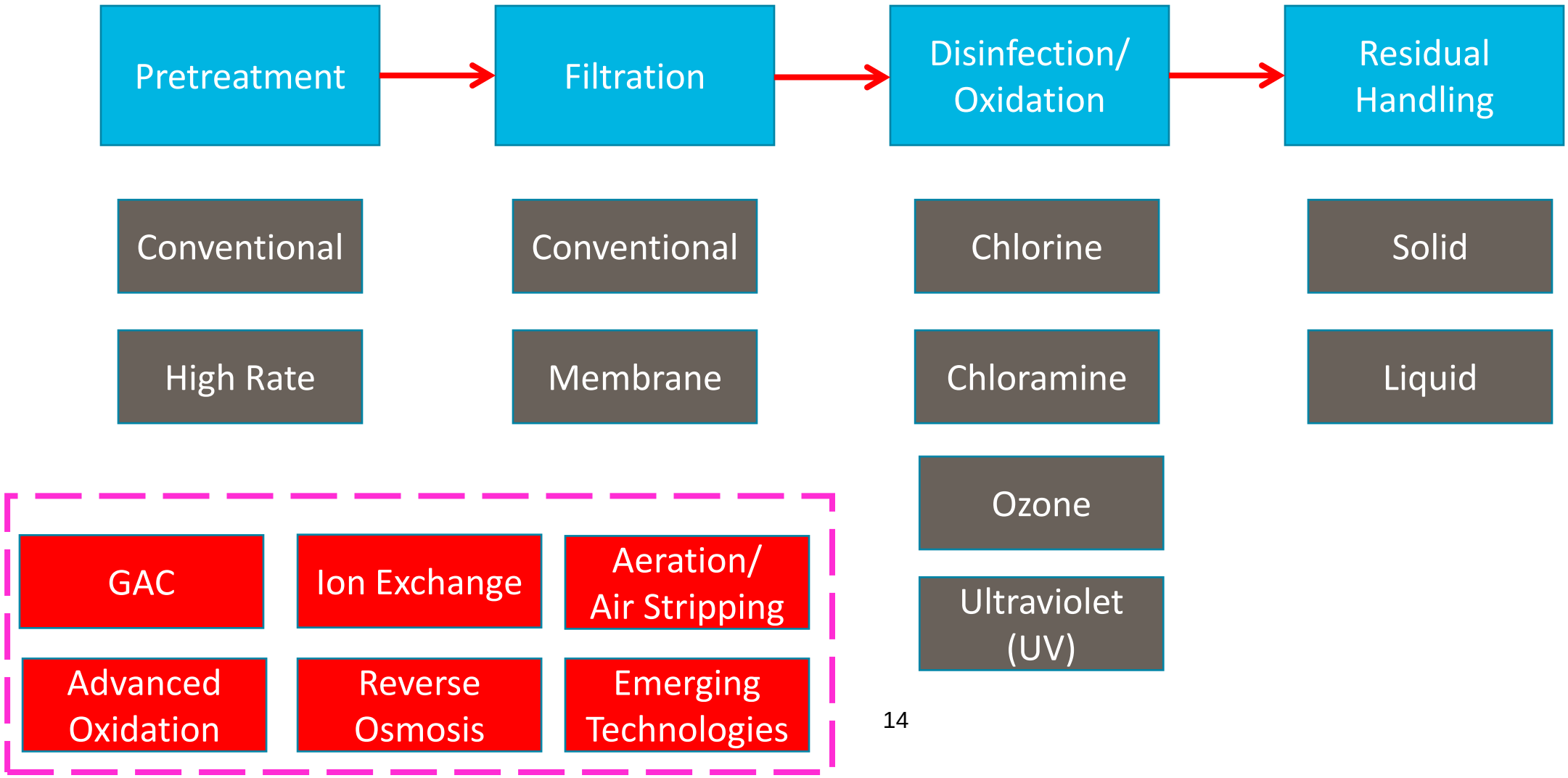

Key First Steps for Water Treatment Process Design

- Usually a few “Key Unit Processes” are selected first and independently
  - Filtration: Conventional Media Filters vs. Membranes
  - Disinfection: Chlorine vs. Chloramination
- Hardness TDS Removal?
  - Softening or NF/RO
- Selection of “Key” processes will dictate associated pretreatment and post-treatment as well as residual handling options