UNIT 6
POLLUTION

Lesson: **How is Wastewater Treated prior to release?**

OBJECTIVES + INTRO

Lesson: **How is Wastewater Treated prior to release?**

After this lesson each student should be able to:

…explain the steps in sewage treatment (wastewater).

…explain the operation of septic systems.

How is Wastewater Treated prior to release?

Municipal wastewaters are polluted by:

- Organic wastes, suspended solids, bacteria, nitrates, and phosphates

Urban **storm waters** flowing over lawns, rooftops, and paved surfaces are polluted by:

- lawn chemicals, oil and gasoline spills on streets, plus other substances as they make their way to a stream, river, or lake.

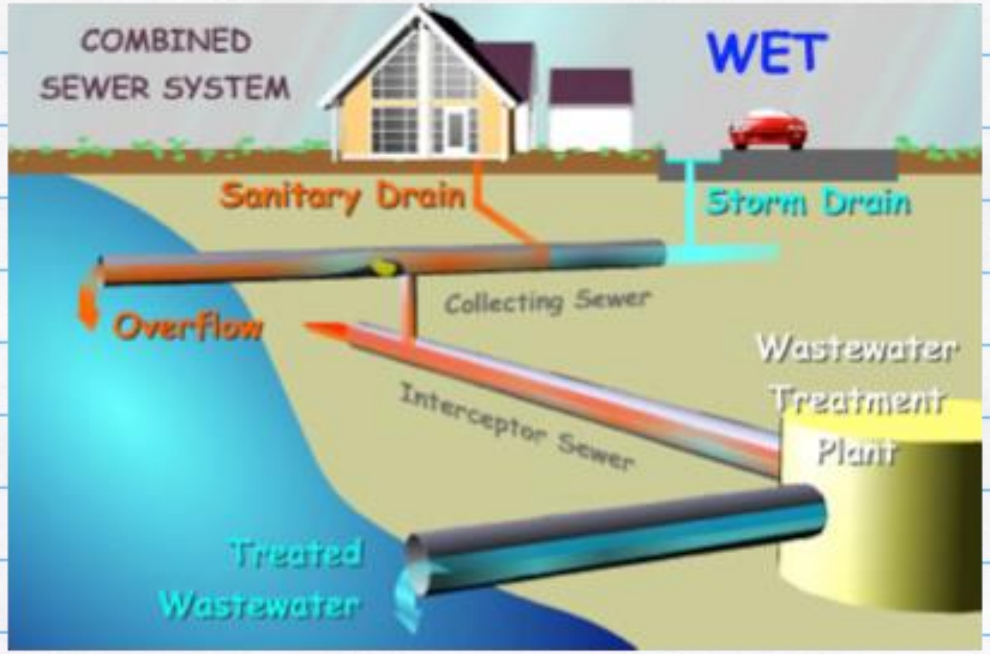
How is Wastewater Treated prior to release?

In urbanized areas, **municipal wastewaters** (mainly sewage) generally are routed to a treatment plant through sanitary sewers

whereas **storm waters** are conveyed to their receiving bodies of water through storm drainage networks.

Online Zoom in to city, examine parcels, land type, think about sewers! (requires flash)
http://webmap2.manitowoc-county.com/AdvancedAccess/

In the past, cities sometimes used combined wastewater collection systems wherein a single sewerage network collected domestic wastewater, industrial wastes, and storm runoff water. *New systems of this type are no longer being built*.



click ^ to visit animation (flash) or see video of "Combined" in supporting files

Discussion:

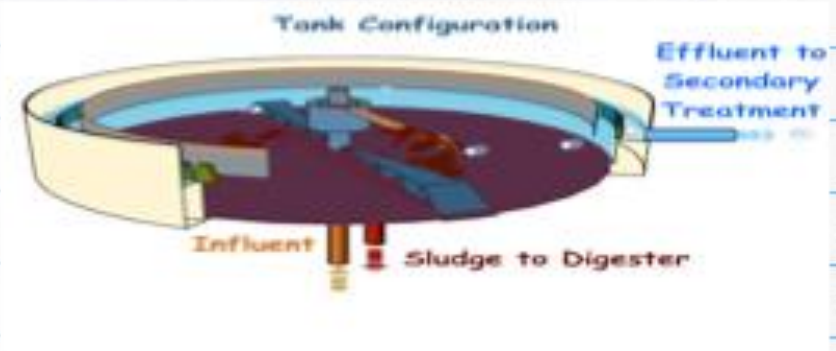
What are the advantages and disadvantages to combined systems?

Treatment:

1. In the first stage, wastewater enters **primary treatment** where screens and grates remove large objects, sand, gravel and other grit.



2. In step two, the wastewater enters large settling tanks where we remove grease and oil after it floats to the top. Heavier material sinks to the bottom of the tank and is removed.

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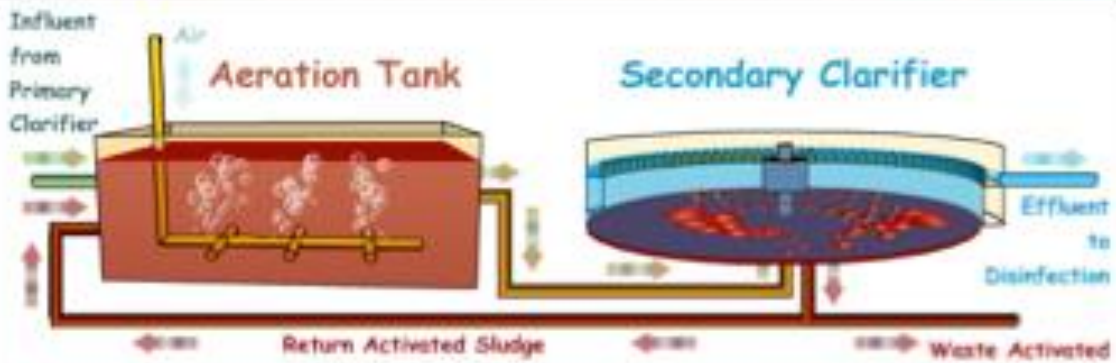
3. In **secondary treatment**, microscopic organisms, or "bugs", breakdown the majority of organic material that remains in the wastewater (the tank is kept well aerated). Keeping organic material out of rivers and lakes is important because it can consume large amounts of oxygen that fish and plants need to live.



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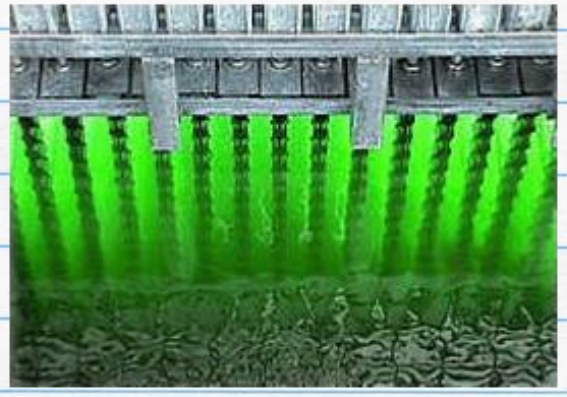
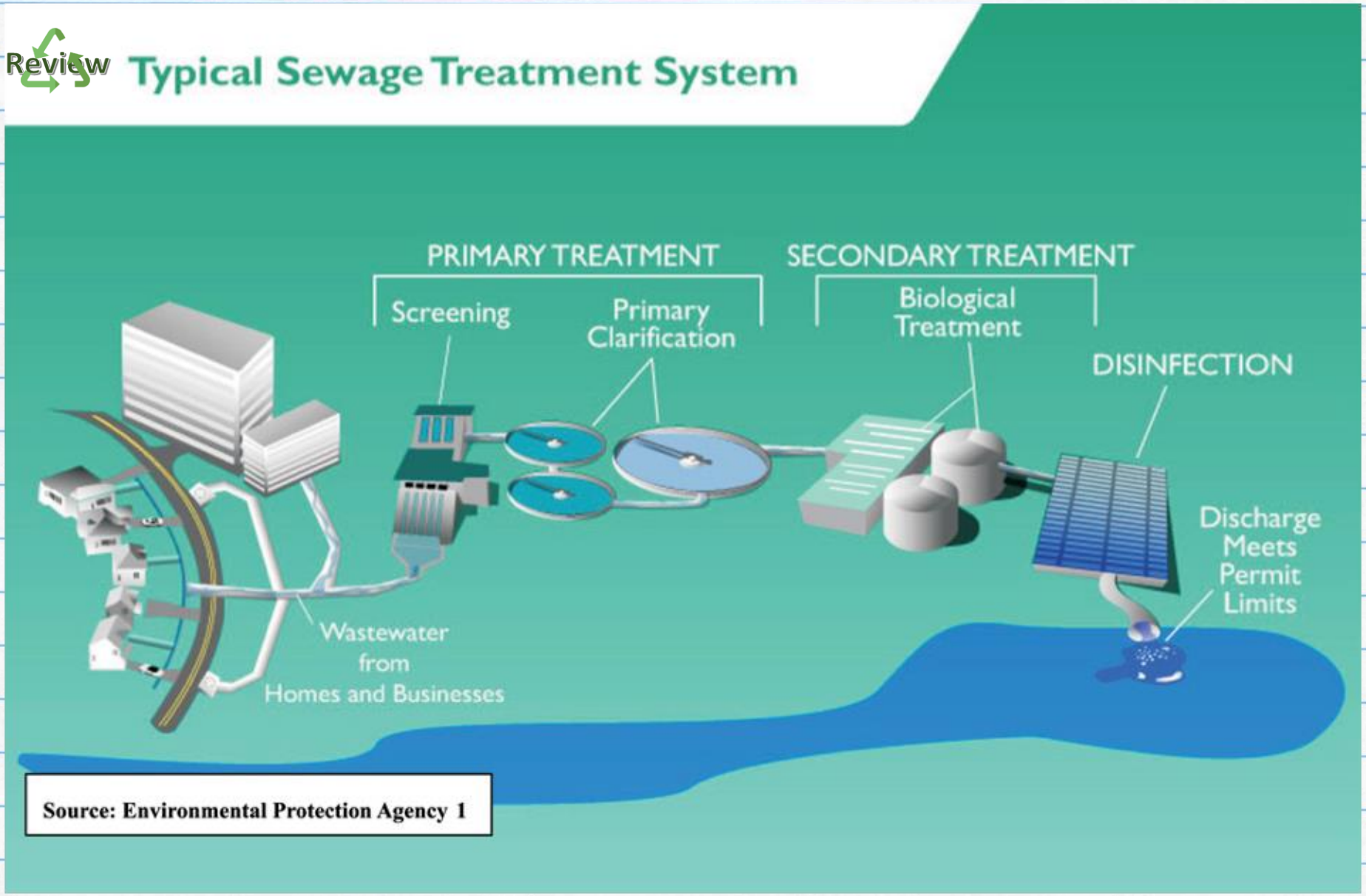
4. Finally, the water goes through. **disinfection**. It's here that chlorine or UV light kill disease-causing organisms The chemicals are removed before the water is discharged to Natural Waterways.



http://prezi.com/vkrffxhyfteh/?utm_campaign=share&utm_medium=copy

Review

Typical Sewage Treatment System



Source: Environmental Protection Agency 1