ALITA CCI Wastewater Treatment System

A Perfect Solution

There are some suburban areas where a wastewater treatment plant can not be installed due to economic and geographic difficulties. CCI System will be a perfect solution in this situation.

CCI System is a self-operated treatment unit. The smallest unit is 2.5 tons (one household), to 100 tons (400 persons).

Wastewater enters into the system undergoes biological treatment, then is discharged to the water body, or reused for irrigation purposes.

Benefits of Using CCI System

- No sewage hook up is necessary, it saves local government time and money.
- No waiting period. The standard treatment plant takes 2-3 years for design, land acquisition, construction and testing process. Whereas CCI System can be installed within 2 months.
- It is economical and affordable for users to install and operate. There is no financial burden for the local government.
- After treatment, the water quality will meet EC discharge requirements.
- CCI System will eliminate odor and clogging pipe problems.
- There are more than 60,000 CCI Systems installed and operated in the USA and other countries.

Comparison of Packaged Wastewater Treatment Systems

Treatment System	**CCI System**	**Concrete System**	**Fiberglass System**
Space Required	Small	Much Bigger	Small
Cost	Low	High	Medium
Weight	Very Light	Heavy	Light
Material	PE (elastic material)	Concrete	Fiberglass
Chemical Resistance	Yes	No	No
Temperature Protection	Yes	No	No
Collision Resistance	Yes	No	No
Pipe Clogging Problem	No	Yes	Yes
Installation, Operation & Maintenance	Simple	Difficult	Difficult

An Innovation of Wastewater Treatment System

Application: Residential and commercial wastewater treatments

Treatment Capacity: 1,100 GPD (5 persons) to 110,000 GPD (550 persons).

Treatment Method: By introducing natural-occurring micro-organisms (CA-8) with proper aeration. This system is good for continuous duty and periodic water flow.

Design: Three (3) tanks for one complete system:

a. Sedimentation chamber
b. Aeration chamber
c. Clarification chamber

Tank Material: There (3) layers of molded P.E. (polyethylene), leak tested, and weather proof.

Treated Water Quality: After treatment, the water quality meets the most stringent discharge requirements all over the world.

CCI System treated wastewater meet the following criteria:

1. Total suspended solids (TSS) less than 10 ppm
2. Biological oxygen demand (BOD) less than 10ppm
3. Oil (Fat, Oil, Grease) less than 15ppm
4. E-Coli less than 15 CFU/100ml

Water Quality Test Results of CCI System

Date	Sample Date 7/14/2000		Sample Date 1/6/2001	
	Raw	**Treated**	**Raw**	**Treated**
TSS (ppm)	**849**	**5.70**	**1140**	**12.80**
BOD (ppm)	**112**	**4.20**	**210**	**9.10**
COD (ppm)	**-**	**-**	**891**	**24.00**
pH	**7.5**	**7.3**	**7.2**	**7.0**
Oil (ppm)	**340**	**10**	**375**	**12**
Odor	**85**	**<10**	**108**	**<10**
E-coli (CFU/100ml)	**1450**	**10**	**1760**	**18**

CA8 - An Innovative Product of Micro-Organisms

CA8 is dehydrated package of micro-organisms for wastewater treatment. It has naturally-occurring cultures and substrates. The package has 37 strains of biomasses collected worldwide, make CA8 an unique product to handle organic wastes.

CA8 has a dark granular look, with slight citrus smell, packaged in one (1) pound, five (5) pound bag and 35 pound pail. At room temperature, the package can store for more than two years. When in use, add CA8 into water, the microbes will immediately become active and reach its peak performance at aerated conditions.

Most often asked questions about CA8 are:

1. What is the difference between CA8 and activated sludge?

    a. Activated sludge could not handle high COD (COD exceeding 10,000 ppm) of organic wastes. Even if activated sludge could reduce some amount of COD, the maximum reducing rate is 85%.

       CA8 can survive and function at high COD amount to 20 ppm or less, and in compliance with other local discharge requirements in a short period of time.

    b. Activated sludge treatment process generates heavy sludge.
       Said sludge need to be removed routinely.

       CA8 does not generate sludge at all. Therefore, it saves user the sludge removing and handling expenses.

    c. Activated sludge could not survive and work under acidic or alkaline conditions. As consequence, the process is very labor intensive.

       CA8 could survive and function at acidic (pH=4 and above) or alkaline (pH=11 and lower) conditions, without adjustment.

2. What are the difference of CA8 and other brand of microbes?

   Other brand of microbes have limited strains of microbes (5 or less), it does not have steady performance under different climates and pH conditions.

   CA8 has 37 strains of naturally-occurring microbes, and performs well under severe circumstances. After treatment, all microbes die off due to lack of oxygen and food, leaving no harm to the environment.

3. What organic wastes can CA8 handle?

   CA8 has proved successful in treating the following organic wastes:
    a. Sugar and related products
    b. Strong odor of hydrogen sulfide and methane
    c. Restaurant and kitchen wastes (fats, oils and grease)
    d. Protein, starch wastes
    e. Petroleum and petrochemicals wastes
    f. Wine and related wastes
    g. Meat and fish wastes

Questions and Answers

1. How many CCI Systems were installed?

   There are more than 60,000 units installed all over the world. (USA, Canada, and Asia countries)

2. Why CCI Systems are different from conventional systems?

   Conventional treatment system use activated sludge, which requires more tank space and much more treatment time; it is not economical for small operations. Whereas CCI Systems introduces CA8 micro-organisms, CA8 degrades organics, and reduces odors. It performs more efficiently and effectively with organics.

3. Is it environmentally safe to use CA8?

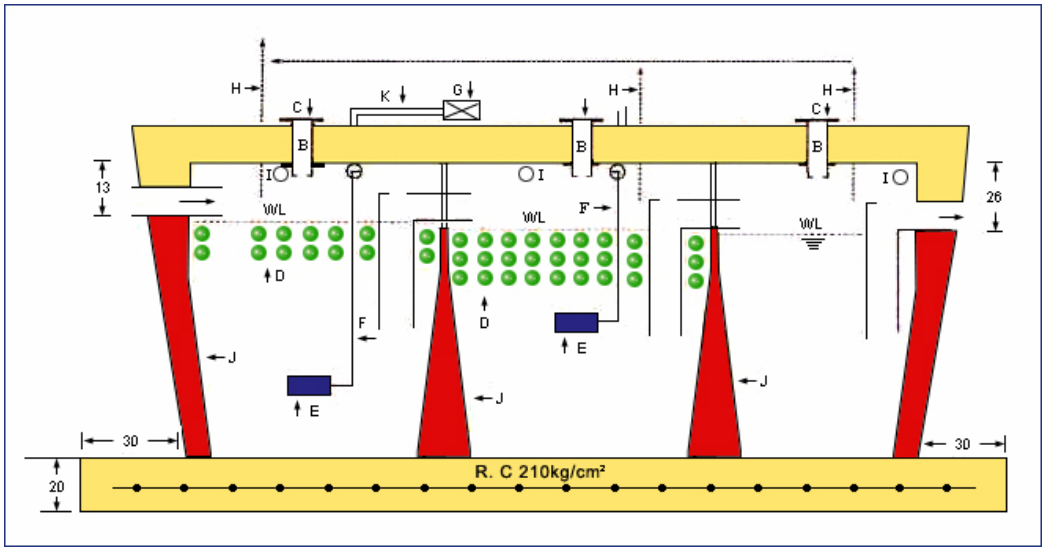
   CA8 is a group of natural-occurring micro-organisms. It is environmentally safe and approved by U.S. EPA.

4. Does CCI System ever run continuous testing?

   Yes, CCI System have performed 18 months continuous water quality test. The discharge water quality holds steady standards.

5. What are the benefits of using CCI System?

   a. Self-operated treatment system
   b. Small, easy to install and simple to operate
   c. A replacement for the septic tank
   d. Eliminates odor
   e. Tested crack-free and leak-free system
   f. Reaches the highest discharge requirements



ALITA CCI Wastewater Treatment Systems

Treatment for	System	Description
One Household ~ 4 Person	**ST-2.5**	Daily capacity: 2.5 ton / 660 gallon 3 tanks: Tank A & B 100 cm L x 100 cm W x 110 cm H Tank C 80 cm L x 80 cm W x 90 cm H Air stones: 4 pieces Air compressor: 1 set (40 LPM) CA8 (micro-organisms): 3 pounds
40 Person	**ST-10**	Daily capacity: 10 ton / 2640 gallon 3 tanks: Tank A & B 230 cm Diameter x 140 cm H Tank C 170 cm Diameter x 135 cm H Air stones: 8 pieces Air compressor: 1 set (120 LPM) CA8 (micro-organisms): 10 pounds
120 Person	**ST-30**	Daily capacity: 30 ton / 7920 gallon 4 tanks: Tank A, B & C 230 cm Diameter x 265 cm H Tank D 180 cm Diameter x 265 cm H Air stones: 18 pieces Air compressor: 1 set (300 LPM) CA8 (micro-organisms): 30 pounds
200 Person	**ST-50**	Daily capacity: 50 ton / 13200 gallon 5 tanks: Tank A, B, C & D 230 cm Diameter x 265 cm H Tank E 180 cm Diameter x 265 cm H Air stones: 24 pieces Air compressor: 1 set (600 LPM) CA8 (micro-organisms): 50 pounds

CCI System Tanks

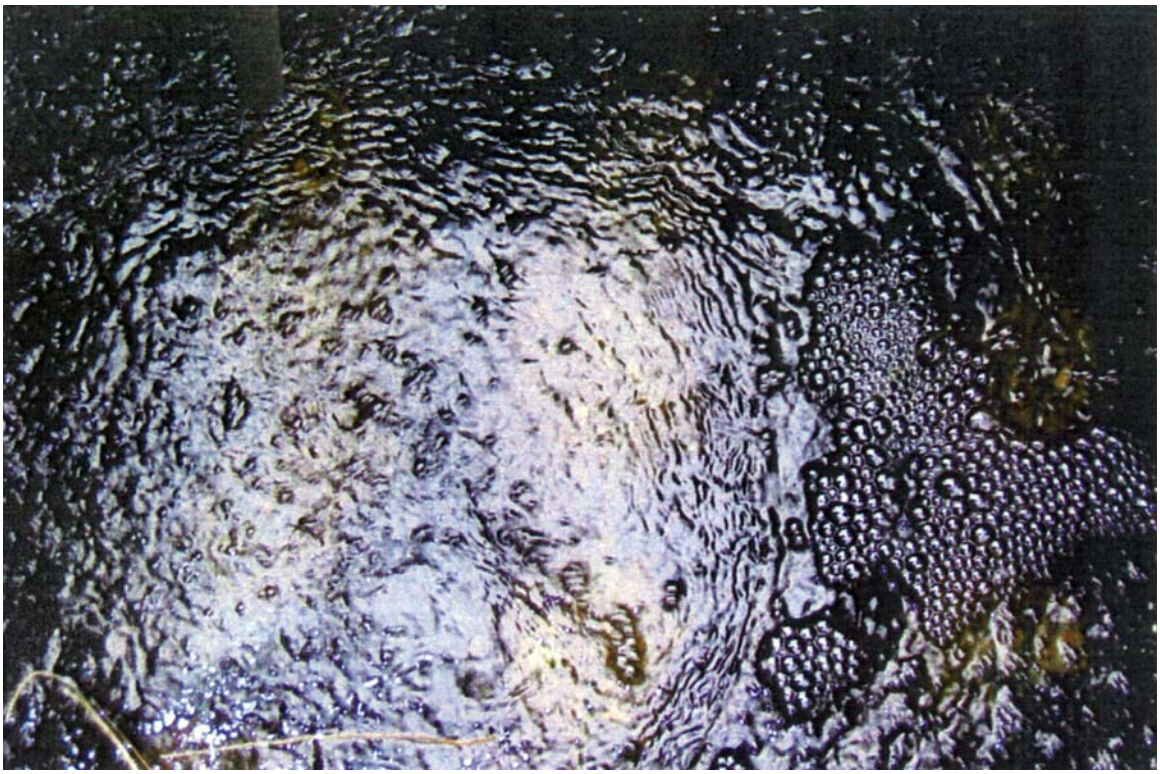
ST-2.5
Treatment system for one household
2.5 ton / 660 gallon daily capacity

ST-50
Treatment system for 200 person
50 ton / 13200 gallon daily capacity

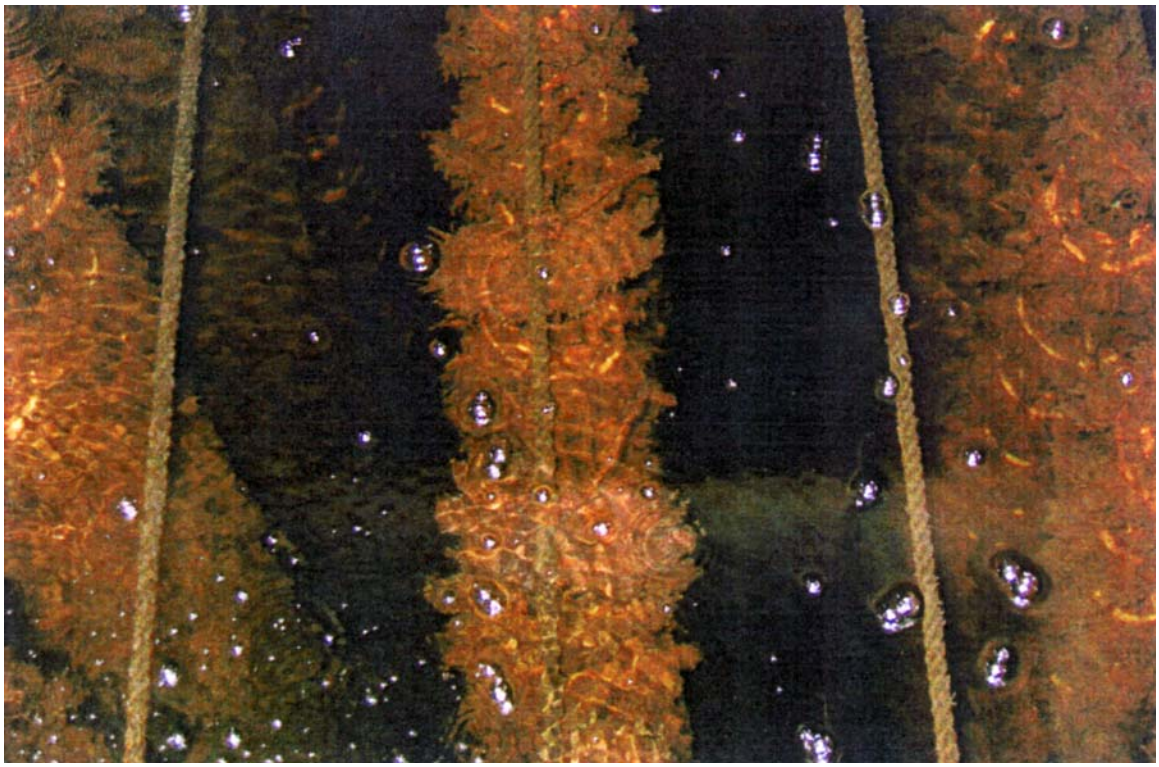
System Installations

Cluster System Installation

Effluent Quality



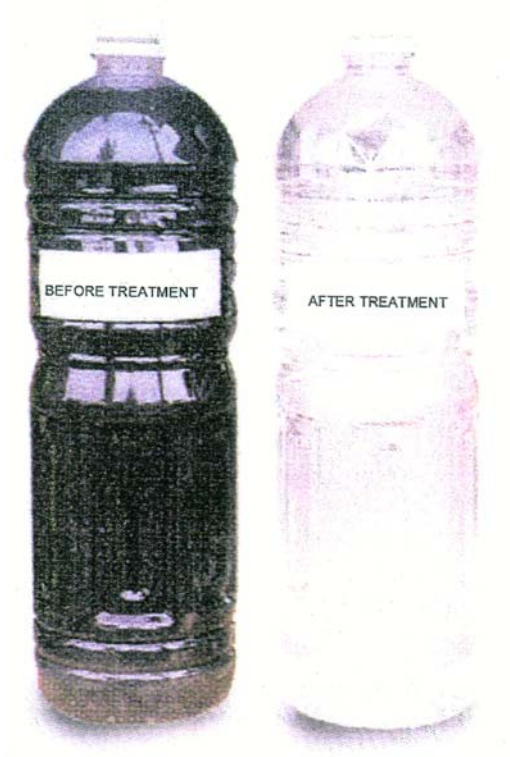
Incoming sewage, dark color, includes fats/oils/grease (FOG)



Treated effluent in clarification chamber, liquid has become clear with low turbidity

The Results are Clear

Discharged water is almost pristine
After treatment, the water quality meets the most stringent discharge requirements all over the world



Effluent samples from before (Left) and after (Right)