CREATING JOBS THROUGH MANUFACTURING MINIATURIZED WATER TREATMENT DEVICES

by

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PATENTED WATER TREATMENT TECHNOLOGIES

1. rapid multimedia filtration system
2. portable water treatment device

INTELLECTUAL PROPERTY PHILIPPINES
BUREAU OF PATENTS

Patent No. 1-2003-000165

Having complied with the provisions of Republic Act No. 8293 and its regulations, this Office grants **LETTERS PATENT** for an

INVENTION

the pertinent data, specification and claim/s of which are hereunto annexed and made part hereof.

Now, therefore, this **LETTERS PATENT** grants unto its owner/s the exclusive right throughout the Philippines to make, use, sell or import the invention and where the invention is or includes a process, including the product obtained directly or indirectly from such process; and

Unless sooner terminated as provided for by law and the regulations, the term of this **LETTERS PATENT** shall be **TWENTY (20) YEARS** from the date of filing.

IN WITNESS WHEREOF, I have hereunto affixed my hand and the seal of the Intellectual Property Office at Makati City, Philippines

EPIFANIO M. EVASCO
Director of Patents

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REASONS BEHIND THE INVENTION

- High average rainfall in the Philippines: 1.5 cubic meters per square meter. --- PAGASA

- A hectare (10,000 sq.meters) can collect 15,000 cu. m. water per year. Estimated evaporation rate of 25% or a net of 10,000 cu. m. This volume, if treated, can sustain the drinking water needs of a small community.

- Philippines has more than 7,000 islands. An average of 4 hectares can source their domestic water from runoff which is much bigger than from traditional rooftops.

- Estimated 19 million Filipinos have no access to clean water. – DENR

- Small islands less than 1,000 hectares: no groundwater

- Communities not reached by services of water districts.

- Communities devastated by floods, typhoons, earthquakes, political conflicts

- People suffer from illnesses attributed to unclean water.

A PORTABLE TREATMENT PLANT

PROCESS FLOW

DENR-CLASSIFIED WATER
AA, A, B, C, D, FLOOD,
RUNOFF, LAKES, SHALLOW WELL

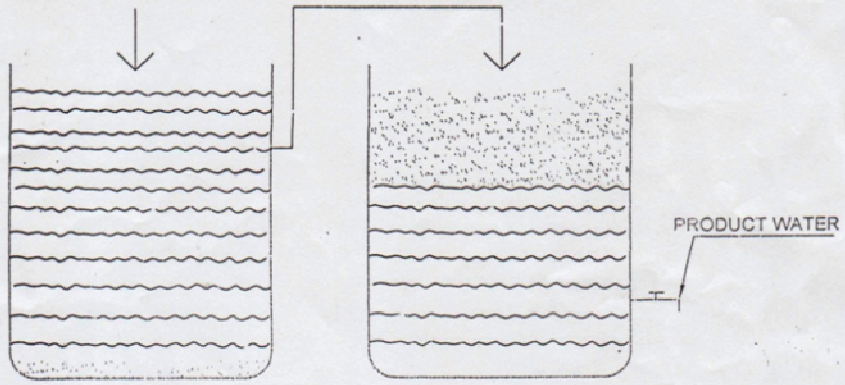


Fig. 1 — PRE-TREATMENT / DISINFECTION

Fig. 2 — FILTRATION / POST TREATMENT

ADVANTAGES:
1. MANUALLY-OPERATED
2. SIMPLE IN DESIGN
3. USER FRIENDLY
4. FULL PROCESS TAKES LESS THAN ONE HOUR
5. LOW OPERATING COST, 1-3.5 CENTAVOS (LESS THAN 0.08 U.S. CENT) PER LITER
6. LOW COST WATER SYSTEM
7. LIGHTWEIGHT AT 3kg

Floodwater can be treated by the miniaturized water treatment device to make it potable.
(PHOTO COURTESY OF NHA).

EL-A & EL-C COAGULANT AND CHLORINE RESPECTIVELY ARE POURED INTO THE PRE-TREATMENT BUCKET OR DRUM AS SHOWN BELOW.

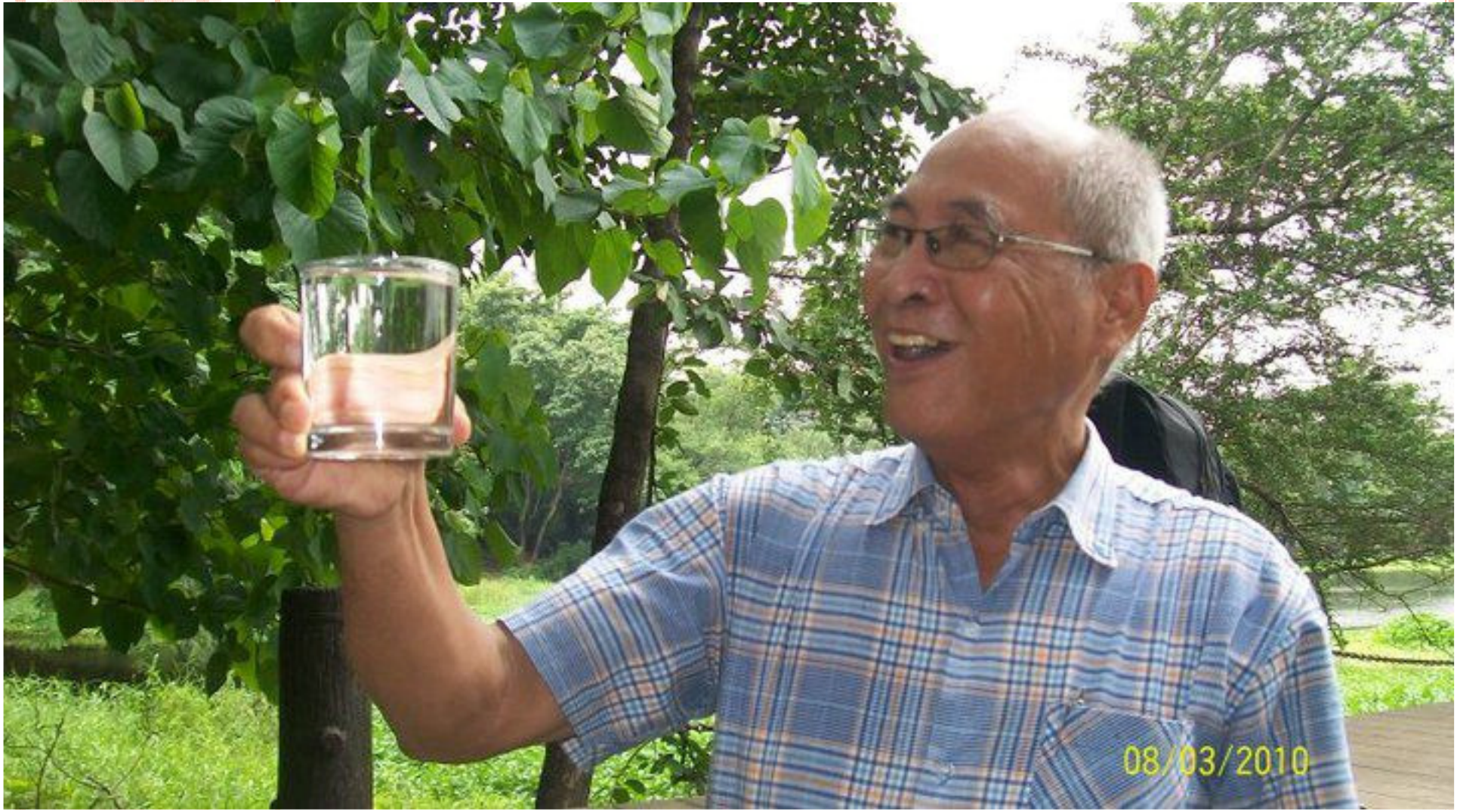
STIR FOR ONE MINUTE TO FORM FLOCS AND FUSE INTO BIGGER FLOCS THAT SHALL RESULT IN SHORTER SEDIMENTATION TIME.

Below is the result of pre-treatment with coagulant and chlorine after 15 minutes.

Pre-treated water is tested for potability by a simple and affordable test kit with DPD tablet before pouring into the purifier

After detention time of 30 minutes, pre-treated water is poured into the purifier as shown below. Product water is now safe to drink.

RAW WATER FROM ANY SOURCE SHALL LOOK LIKE THIS PRODUCT WATER AFTER PASSING THROUGH THE "PORTABLE WATER TREATMENT DEVICE", IT'S CRYSTAL CLEAR!

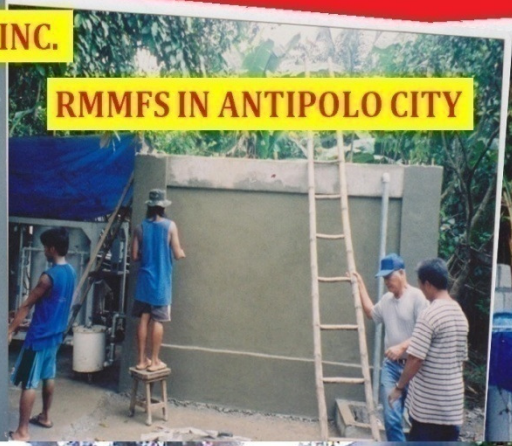


BARANGAY WATER TREATMENT PLANT

- **Enlarged version of the Portable Water Treatment**
  Capacity: 30,000 liters per day.
- **Can supply the drinking water needs of up to 1,000 households per day.**
- **Made of "knock down" parts which can be assembled into a huge platform for four (4) large tanks, 1,000 liters each of raw water for pre-treatment.**
- **Raw water is pumped into each of the tank. Each of which is provided with a stirrer light enough to use even by children and housewives.**
- **Metering cups are used to measure amount of coagulant and chlorine for proper dosage as per "How to use Instruction". Requires 45 minutes of detention time.**
- **Power required is 3.0 kwh per day to pump raw water to the tanks 9.0 meters from the source.**
- **Equipped with backwashing outfit that takes 15 minutes of backwashing and rinsing.**
- **Production rate per hour is estimated at 1,500 liters.**
- **Production cost is an average 25 centavos per 5 gallon (20-L) containers or 1 ½ centavos per liter.**

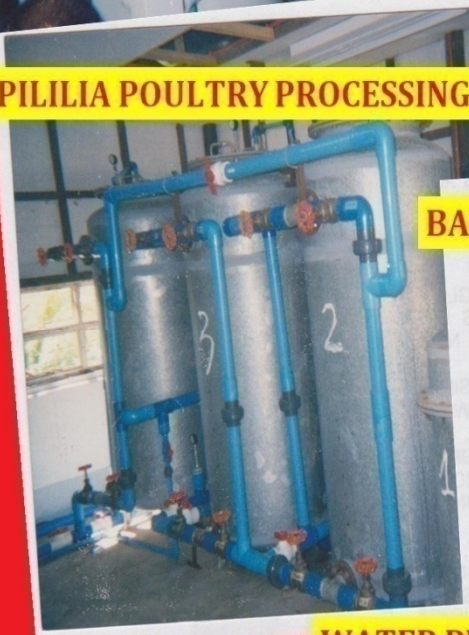
PILILIA POULTRY PROCESSING PLANT INC.

RMMFS IN ANTIPOLO CITY



RIZLAQ COOPERATIVE IN ANTIPOLO CITY

PILILIA POULTRY PROCESSING PLANT, INC.



BARANGAY WATER TREATMENT IN ALAUAN PROJECT

PILILIA POULTRY PROCESSING PLANT, INC.

WATER PURIFICATION PLANT IN TRENTO AGUSAN DEL SUR

Create jobs in typhoon devastated communities through manufacturing of miniaturized water treatment devices designed by the author

- Potential cottage industry that could employ unskilled workers.
- Could encourages the building of water impounding lagoons that can store runoff water needed during the dry months. The miniaturized water treatment device could be used to treat stored run-off water to make it potable. Thousands can be employed by these manually built mini lagoons.
- A multiplier-effect can result in such undertaking with the processing and manufacturing of raw materials needed to assemble miniaturized water treatment devices. The clay pot or "banga" industry can also be revived by modifying it with a miniaturized water treatment device sitting on top of it.

Manufacture of the Portable Water Treatment Device

- Can employ up to 1,200 people if daily output is 1,000 units.
- Made of 100% local materials
- Does not require special skills and machines.

- **This portable water treatment device can make any turbid and contaminated water potable.**
- **Does not contain toxic substances nor need electricity.**
- **Simple device. Easy to operate even for kids.**
- **Patented and DOH-FDA certified.**

RECOMMENDATIONS for promoting manufacturing for shared growth

1. **SGRA, other seminar co-organizers, and participants present the ideas, technologies, approaches and expertise generated from this seminar to the national government agencies, local governments, development organizations and donors that are able to adapt, upscale, initiate, implement and sustain efforts for shared growth.**

2. **Seminars like this one can be followed by advocacy meetings organized by SGRA inviting policy makers, decision makers, local chief executives, donors and others so that the shared growth agenda is pushed forward.**

3. **TECHNOLOGIES such as those presented here have huge potential for the attainment of shared growth if adapted by national government, LGUs, and communities.**

4. **SGRA can provide small grants to enable experts and communities to work together. Example: portable water treatment devices can be manufactured by Yolanda victims right in their own communities for their drinking water supply and also for their livelihood.**