

## Cheap Water Purification System Uses Car Battery And Table Salt

Bad water? Here's an inexpensive way to make just about any water fit to drink.

Says consulting engineer Bob Malcomb, Deputy, Indiana: "This simple water purification method uses salt and a low voltage electric current to produce chlorine gas and ozone. It will kill even Cryptosporidium and other viruses that many municipal water treatment plants can't touch."

Malcomb says the process was developed by a Christian missionary who worked in poor Third World countries where clean drinking water is almost impossible to find.

"He brought it to me to help produce it. He's shipped more than 600 of them overseas," Malcomb says.

The low-tech water purifier is made of 2 in. PVC pipe, put together in a U shape, with electrodes inserted in the lower portion of the pipe. A semi-permeable membrane between the electrodes separates the water, which has a higher salt concentration on one side.

Salt water is made by mixing regular table salt with a small amount of previously purified water.

To make the system work, electrical current is passed through the water by attaching a car battery to the electrodes using jumper cables. The current passing through the water produces a chemical reaction that releases small amounts of chlorine gas and ozone. Both gases rise into one end of the U-shaped pipe. A 12-volt DC fish tank aeration pump (the kind used to keep air and water circulating in bait tanks on fishing boats) pulls the gases out of the enclosed PVC pipe to the bottom of the tank of water being treated.

When hooked to a fully charged car battery, this system will purify about 55 gal. a minute. "We also have a solar panel and a wind generator that do a good job," Malcomb says.

While this water purification system was developed for third-world countries, it's ideal for treating water of unknown quality in remote locations on farms or for cabins and vacation homes.

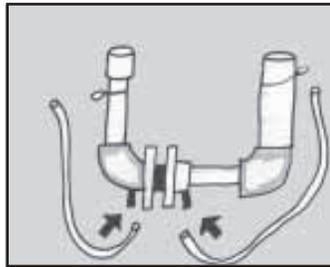
You'll need a chlorine tester (like used for a swimming pool) to monitor the chlorine level in the water. "The goal is for the water to have 1 to 4 parts of chlorine per million," Malcomb says. "At 20 ppm, chlorine can cause cancer. And even dissolved in water, ozone can be dangerous. You need to wait at least 45 minutes after treating water to give the ozone time to dissipate before it's used for drinking."

"We're working on a way to automate the system, so it will shut down when the chlorine gets to a pre-set level in the water. With this and a permanent electrical connection to a transformer, simple wind generator or solar panel, you could purify water all day long," he says.

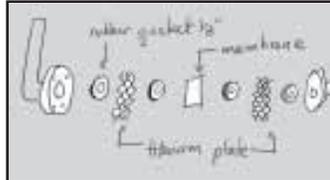
System maintenance is simple, too. "Every once in awhile, you need to open the tube, dump out the remaining water, rinse out any residue and refill it with fresh water and salt," he says.

"It's by far the cheapest method for purifying water that I've ever found," he adds. The price for the device is \$350. This includes all the equipment and instructions to make the system work except the battery and jumper cables.

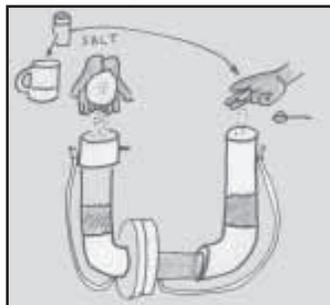
Malcomb is working with Purdue agricultural engineers to develop a filtering system to also remove soil particles from



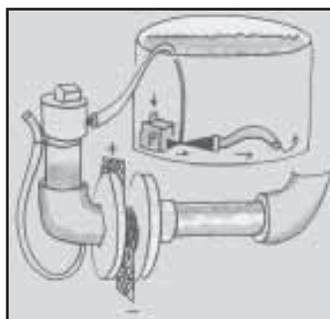
Low-tech purifier is made from 2-in. PVC pipe put together in a "U" shape.



A membrane separates the two sides.



Different concentrations of salt are put into each side.



Battery cables are hooked up to the positive and negative electrodes. Current passing through the water produces a chemical reaction that releases chlorine gas and ozone. These gases are then sucked into the water to be purified.



Volunteer students from Asbury College, Kentucky assembling purifiers for shipment overseas.

water.

Contact: FARM SHOW Followup, Bob Malcomb, 7649 N. Terry Road, Deputy, Ind. 47230 (ph 812 794-2875; E-mail: bobmalcomb@juno.com).

## Crop Lifters Replace Hold-Down Clips, Guards

"We've had tremendous response from FARM SHOW readers to your article on our LIFTGUARDS™ - sickle guards that double as pickup fingers while still protecting the sickle sections. Farmers tell us they greatly improve performance, even in standing crops, so you never have to take them off. They simply bolt on in place of conventional guards, unlike other add-on fingers," says Joe Figliuzzi, inventor.

"Many of the farmers who initially contacted us were disappointed that our LIFTGUARDS would only work on cutting platforms with sickle guards. We've solved that problem with our new LIFTCLIPS™, which are designed to fit cutterbars without guards. These pickup fingers replace the hold down clips and can be left on the combine permanently.

"We were excited to learn this spring that the University of Minnesota plans to conduct detailed field tests on our products this fall. They will be testing both types of crop lifters under various crop conditions.

"Both LIFTGUARDS and LIFTCLIPS sell for \$19.95 apiece. Most users space them about 1 ft. apart but some bean growers put them together as close as 8 in."

Contact: FARM SHOW Followup, Joe



New LIFTCLIPS mount in place of hold-down clips.



LIFTGUARDS, introduced last year, replace conventional sickle guards.

Figliuzzi, Minnesota Rice Co., 41502 Hunt Lane NE, Kelliher, Minn. 56650 ph 218 647-8529; E-mail: joefig@paulbunyan.net; www.liftguards.com).



Bolt-on kit turns any full-size Chevrolet, Dodge and Ford pickup into a dump truck.

## Do-It-Yourself Pickup Dump Kit

Turning a pickup into a dump truck is as easy as 1,2,3 with the Pierce Universal Dump Kit, according to the company, which has sold thousands of bolt-on kits since 1977.

"It's easy to install, usually in about a day," says Jeff Pierce, company owner. "Our kits are used by landscapers, farmers and people hauling trash. You name it, and they use it."

The kit is priced at \$787.99 and is designed for full-size Chevrolet, Dodge and Ford pickup models. It comes complete with the cylinder, hoist, a 12-volt hydraulic pump and reservoir, hydraulic hose, dash-mounted toggle switch, electric wiring, and mounting hardware.

Easy-to-read instructions, including a list of needed tools, makes bed removal and hoist installation a straight forward project.

Aside from a metal cutting saw (or cutting torch) and an overhead winch rated for load, only standard shop tools are needed. The only welding required is when reattaching the rear bumper, which Pierce suggests be welded to the hinge arm.



Kit comes complete with all needed parts as well as easy-to-read instructions.

"Our kits can be adapted to some of the little imported pickups as well," says Pierce. "On a small import, you may have to move the gas tank or make other fabrications as you go."

Other people put the kit on towed pickup bed trailers.

Contact: FARM SHOW Follow-up, Pierce Sales, Expressway 287, Henrietta, Texas 76365 (ph 800 658-6301) or on-line at www.piercesales.com).