

## Thinking Outside the Tub

By John Gilbert - November 22, 2015

I recently received an email with a suggestion for someone to develop a moveable bathtub partition to conserve water. The proposal was in jest, but it reminded me of our water shortage problem. I understand actions taken for water conservation, but I feel we are not solving the problem, "Tub Partitioning" is a good example. Perhaps we should do some thinking outside the tub, so here goes.

There is no shortage of water. We have water covering 71 percent of the world's surface. We humans and other land animals live on islands in this body of water and we call a few of the big islands "continents." A picture of earth from space shows us as a blue planet because 71% of the earth reflects as blue from this enormous body of water.

For humans and other land-dwelling creatures our digestive systems only tolerate small amounts of salt yet our bodies are mostly water and we must continuously ingest fresh water or products containing fresh water to maintain our required high percentage of water.

Only 3% of earth's water is fresh water, and only 1% is accessible, because 2% is trapped in ice-caps that are melting into the oceans and thus becoming more salt water. This melting action also raises the level of the oceans and submerges more of our island living space.

It is very costly to remove enough salt from water to make it safe for us to drink. The simple method is to heat water until it becomes steam, and then cool the steam so it will condense as water without salt. A second method is to force water through a fine membrane to filter out salt. Both conversion methods require lots of energy that is derived from two sources, nuclear

fission or fossil fuel. Nuclear reactors are not popular, so we are left with burning fossil fuel for the energy to extract salt from water.

Some countries are now using their fossil fuel to convert salt water to fresh water. Saudi Arabia, for instance, fills their swimming pools and waters their desert lawns with fresh water refined from sea water. California also has factories producing fresh water this way and is proposing more conversion plants.

Fossil fuel is used for many other things. The fertilizer spread on our lawns, and on fields to grow our wonderful food, comes from fossil fuel.

In a weird twist of logic, we use processed fossil fuel fertilizer and precious fresh water to grow genetically modified grain that we then process into automobile gas as a substitute for gas that we would normally refine directly from fossil fuel! The net result is a higher expenditure of fossil fuel than necessary to put gas in our engines. That decision was made to subsidize farmers.

There definitely is a limit to our supply of fossil fuel. It will eventually run out. Fossil fuel is decayed life forms. A planet that has never had life forms will not have fossil fuel. Our supply of coal, oil and natural gas is decayed grass, weeds, trees, moss, insects, fish, and even mammals like us.

One of the lessons of history is that species that fail to adjust to changes in the environment tend to become extinct. The time may be arriving for us humans to adjust to our environment. Our environment is salt water, so we must change our metabolism, so we can live with salt water. The question is, "how do we do this, and how fast?"

We don't have the luxury of 10,000 years evolution to adjust to consuming salt water, like we did in the last 10,000 years adjusting to drinking cow's milk - another good subject to discuss. There seems to be something wrong with this whole

picture as the world population exceeds seven billion.

Recently a researcher disturbed by the chopping off cow horns by dairies to make the cows safe to be around, came up with a solution to the de-horning process. He isolated the DNA in a cow from a subspecies that was hornless and injected it into a fetus of a pregnant horned dairy cow. The fetus developed as a hornless dairy cow. He anticipates that some of the descendants of that high-quality milk producing hornless cow will also be hornless and he obtained funding for further research. Thus hundreds, perhaps thousands, of year's evolution can potentially be achieved in a few cow generations.

We know there are numerous life forms living in the oceans that contain DNA designed to tolerate salt – probably there is more diversity there than living on land. So why don't we modify our descendants' DNA to eliminate the salt as part of their digestive function? You can be assured that if this can be done, then it will be done, by someone, someplace in the not-too-distant future.

Perhaps, individuals that can't accept this solution will be part of another *Homo erectus* sideline like the *Neanderthals*.