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The Environmental Impact & Other Potential Risks Associated With Bottled Drinking Water

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Outline

- ❑ How big is the problem?
- ❑ Why should we care?
- ❑ Is there an alternative?
- ❑ Closing remarks & your questions/
comments



How big is the problem?

Numerous articles and studies from reliable sources have been published regarding the actual environmental impact of using bottled water.

Let me quantify some of the key areas: (without necessarily prioritizing them)

- In the U.S. alone, some **32 Billion** plastic drinking water bottles were sold in 2009
→ *In the U.A.E., more than **750 Million** bottles a year – 3rd highest in the world.**
- The crude oil production that goes into making the plastic bottles... approx. **30 Million** barrels of oil in the U.S. alone → *U.A.E. equiv. **700 Thousand** barrels.*
- The energy used in water treatment (desalinate/purify/disinfect) as well as the production processes at the bottling plant. This has been estimated at roughly **0.25 Liter** of oil for each Liter of drinking water.
→ *For the U.A.E., that would add another **500 Thousand** barrels.*
- The fuel consumed by delivery trucks (or your own car) to transport the water to/from your home or school adds as much as **0.10 Liter** of fuel per Liter of drinking water & more than 5-20 times or more that amount for imported water.

* Details on Page 8.

Sources: Container Recycling Institute, Beverage Marketing Corporation, Earth911.com, The Economist, others.



Why should we care?

The biggest issue is arguably the recycling of the plastic used in practically all sources of bottled water... just imagine the volume of waste generated by bottles that aren't recycled.

Here are some more thought-provoking stats... in the U.S., it is estimated that:

- 8 out of 10 plastic bottles end up in a landfill (not recycled or incinerated).
- It can take about 450 years or more for a plastic bottle to degrade in a landfill.
- Only about 20-30% of plastic bottles are recycled, higher in some states than others.
- It is estimated that the production of plastics accounts for 4% of total energy consumption.
- Less than 1 percent of all plastics is actually recycled.
- Recycling a single plastic bottle can conserve enough energy to light a 60-watt light bulb for up to six hours.
- Producing new plastic products from recycled materials uses approx. 67% less energy than required to make products from raw (virgin) materials.

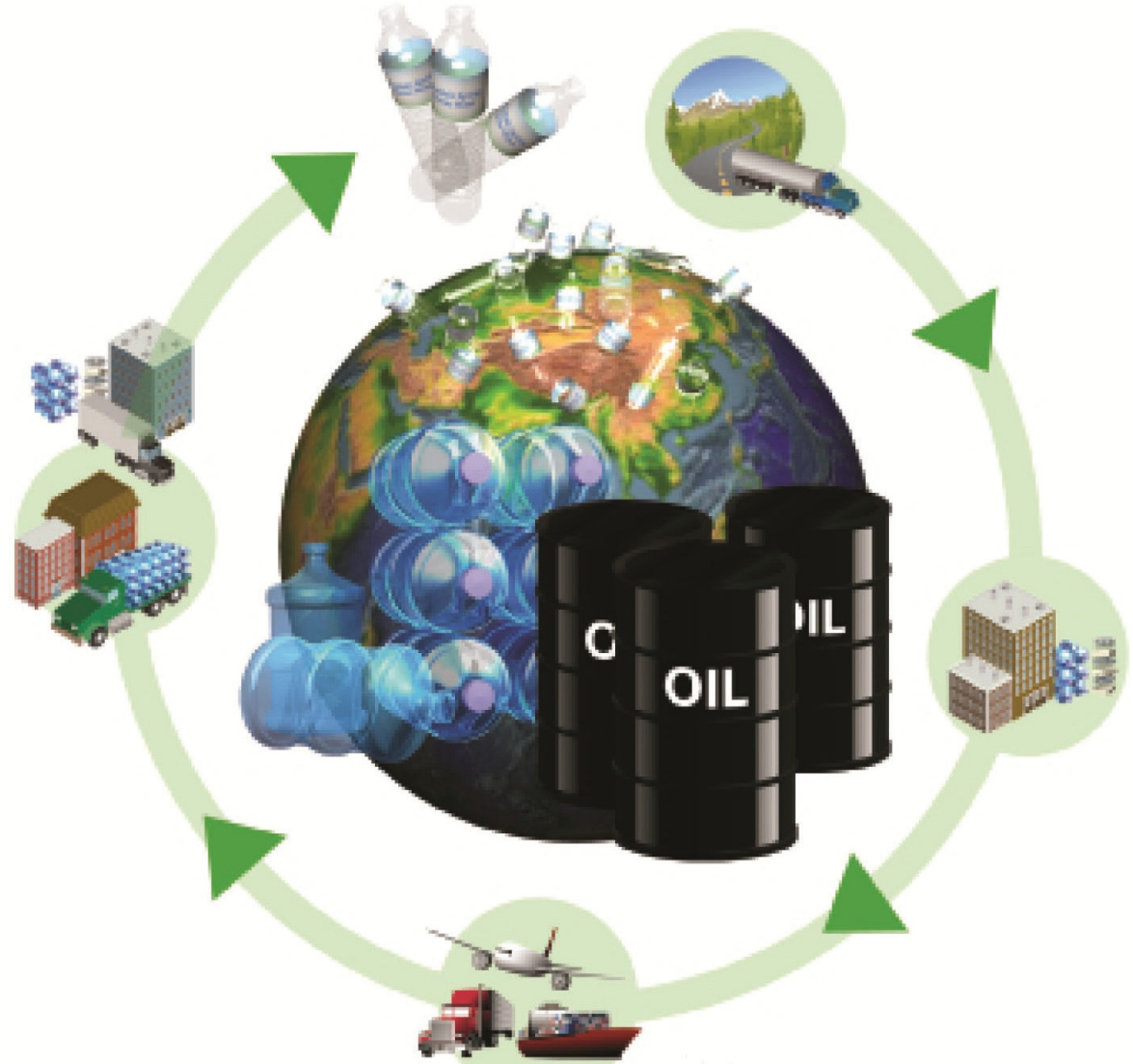
Sources: Container Recycling Institute, International Bottled Water Association, Earth911.com, The Economist, others.



Why should we care?

The real impact...

Bottled water consumes energy from production to distribution and disposal or recycling






Why should we care?

The numbers are truly startling...

CRI
CONTAINER
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Number of beverage cans and bottles that have
been landfilled, littered and incinerated
in the U.S. so far this year: **25,737,285,197**

As of 13-Mar-2012 @ 23:50 (local U.A.E. time)

That's more than **350 Million** containers a day
... almost 15 million containers **per hour** !!!

U.A.E. equivalent... almost **6 Million** containers a day

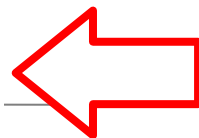
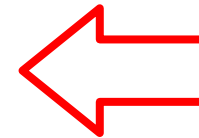
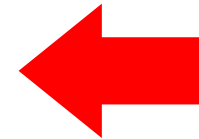


But that's in America, so ...
Why should we care?

GLOBAL BOTTLED WATER MARKET					
Per Capita Consumption by Leading Countries					
2004 – 2009					
2009				Gallons Per Capita	
Rank	Countries		2004	2009	
1	Mexico		44.5	61.9	
2	Italy		48.5	50.7	
3	United Arab Emirates		27.9	40.1	
4	Belgium-Luxembourg		39.1	36.7	
5	Germany		33.0	34.5	
6	France		37.4	33.8	
7	Lebanon		26.8	31.8	
8	Spain		36.1	31.4	
9	Hungary		20.1	29.3	
10	United States		23.2	27.6	
11	Slovenia		21.2	27.1	
12	Thailand		20.2	26.4	
13	Saudi Arabia		23.2	26.4	
14	Switzerland		26.3	26.0	
15	Croatia		18.1	25.6	
16	Qatar		20.6	25.5	
17	Cyprus		24.3	24.5	
18	Austria		21.7	23.5	
19	Czech Republic		23.0	23.3	
20	Hong Kong		15.4	21.9	
	GLOBAL AVERAGE		6.4	7.9	

Source: Beverage Marketing Corporation

That's **5 times** the global average & 50% more than the U.S. !!





Why should we care?

Even more reasons...

A very large proportion of the bottled drinking water used in homes & offices in the U.A.E. is supplied in re-usable hard plastic bottles made from Polycarbonate (PCB), also known as Lexan.[®]

There are health and hygiene factors or risks associated in particular with the use of the ubiquitous free-standing water coolers with the 5-gallon bottles:

- The leaching of *Bisphenol A (BPA)* has been linked to certain ailments or potential health risks – refer to the Harvard School of Public Health press release of May 2009. [[Link](#)]
- Plus, there are other health / hygiene risks associated with regular handling and replacing the bottles, possible contamination, etc.



No, but really... **Why should we care?**

- A picture tells a thousand words:



- In terms of time, space, and convenience, it is also worth considering the regular deliveries of bottles and the associated hassles of transporting / storing them at your home or place of work – office, bank, school, clinic, etc.
- Don't forget that each time you replace a bottle, lifting the 20-kg. full bottle poses or increases the risk of developing or aggravating back pain.



So... is there an alternative?

I believe there's more than one...

- Use ***bottle-free*** dispensers... there are some on the market (air-to-water, home filtration units, etc.)
- Produce / treat your own drinking water *
- When you do buy bottled water:
 - ✓ Always choose local water from the closest source... saves a lot of fuel (& usually saves you money)
 - ✓ Choose PET over PCB when available
 - ✓ And of course... *Re-use & Recycle* the empty bottles
- Spread the word !!!

* Please don't drink directly from the tap or well unless the water has been tested / checked to be free of contaminants & harmful substances with lab analysis confirming that it is fit for drinking.



Closing Remarks & Your Questions / Comments



About DEWS

- **Dynamic Energy & Water Solutions (DEWS)** is a licensed *Enpark Free Zone* company based in Dubai.
- We are a future-looking company that has the will and desire to advance the use of solar energy and water purification / recycling, not only because they are essential ingredients of a *Greener*, more sustainable environment, but also out of conviction that they can provide all participants with better living conditions and meaningful work in the process.
- Our unique value proposition is providing products, turn-key solutions and other services to *underserved niches with special needs* – new solar and renewable energy technology / applications, solar to water, solar cooling, water purification, re-use & recycling, drinking water dispensers, equipment sale & rental / leasing, project advisory services & execution support.
- DEWS caters to the needs of a number of target market segments in the Middle East & North Africa, offering innovative products & services to a variety of sectors, including commercial, residential, industrial, utilities, marine, oil & gas.
- DEWS markets and sells technology-based products of high quality and unique function or features supplied by reputable vendors / manufacturers.

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good about it...***



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2009 Releases

BPA, Chemical Used to Make Plastics, Found to Leach from Polycarbonate Drinking Bottles Into Humans

Exposure to BPA May Have Harmful Health Effects

For immediate release: Thursday, May 21, 2009

Boston, MA -- A new study from Harvard School of Public Health (HSPH) researchers found that participants who drank for a week from polycarbonate bottles, the popular, hard-plastic drinking bottles and baby bottles, showed a two-thirds increase in their urine of the chemical bisphenol A (BPA). Exposure to BPA, used in the manufacture of polycarbonate and other plastics, has been shown to interfere with reproductive development in animals and has been linked with cardiovascular disease and diabetes in humans. The study is the first to show that drinking from polycarbonate bottles increased the level of urinary BPA, and thus suggests that drinking containers made with BPA release the chemical into the liquid that people drink in sufficient amounts to increase the level of BPA excreted in human urine.

The study appears on the website of the journal *Environmental Health Perspectives* and is freely available at <http://www.ehponline.org/members/2009/0900604/0900604.pdf>.

In addition to polycarbonate bottles, which are refillable and a popular container among students, campers and others and are also used as baby bottles, BPA is also found in dentistry composites and sealants and in the lining of aluminum food and beverage cans. (In bottles, polycarbonate can be identified by the recycling number 7.) Numerous studies have shown that it acts as an endocrine-

