10 products you may not realise are threatened by the CO2 shortage

July 9 2018, by Mercedes Maroto-Valer

Credit: Karolina Grabowska from Pexels

I have found myself in a rather unexpected place over the past few days. For more than two decades, I have been incessantly proclaiming that we produce far too much carbon dioxide (CO_2) with the associated risks of

global warming. But while ever more is being pumped into the atmosphere, Europe and Mexico are also running out of usable CO_2 – as several plants that produce CO_2 have closed down for maintenance.

In total, the world consumes about 80m tonnes of CO_2 per year. Annual CO_2 emissions are currently around 32 billion tonnes, but we have experienced the worst CO_2 supply shortage in decades in the UK. Most of the UK's CO_2 demand is met as a byproduct from the fertiliser industry that generally closes operations during the summer months. We do produce CO_2 from many other sources, but despite the development of CO_2 capture technologies, these are not deployed at the commercial pace needed to actually be able to use it.

In the UK, the situation has been exacerbated by the current heat wave and pubs running out of beer – precisely in the middle of the football world cup. But is CO_2 really that critical to how society functions? The short answer is yes, and here are ten applications that are threatened by a shortage of CO_2.

1. Wine

There's been a bit of a panic about running out of beer in the middle of summer. But there are many other applications of CO_2 in the drinks industry, such as carbonated soft drinks. But if you are more of a wine drinker or even a connoisseur, you are not home free. CO_2 addition is essential for wine making and achieving the perfect fermentation.

2. Food of all kinds

CO_2 also has many applications in the food industry, too, from its use in abattoirs and stunning farm animals before slaughter to the preservation of fresh meat in vacuum-sealed packaging. And vegetarians are just as

vulnerable, especially crumpet lovers. CO_2 is used widely as refrigerant in food retail applications, including many fruits and vegetables.

3. Lasers

CO_2 lasers are one of the most useful and efficient lasers, producing a beam of infrared light. This is not only relevant for Star Wars fans, CO_2 lasers have a wide range of applications in industry for cutting, welding, engraving and even 3-D printing. What's more, medical CO_2 lasers are used in many soft tissue surgical procedures, from removing vocal cysts to face lifts.

4. Fire extinguishers

CO_2 is a non-combustible that can be pressurised – hence its ubiquitous use in fire extinguishers. But pressurised CO_2 gas is also used in airguns and self-inflating life jackets. CO_2 canisters are also sold as a cyclist's best friend for repairing punctures.

5. Decaf coffee

At certain temperature and pressure (31°C and 73 atmospheres) CO_2 becomes a supercritical fluid. That does not mean it is critically dangerous, but rather that it has very unusual and extremely useful properties. For example, it has the density of a liquid, but behaves like a gas. Supercritical CO_2 is used as an environmentally friendly solvent for dry cleaning, decaffeinating coffee and in the production of herbal distillates and essential oils, among other things.

6. Refrigerant

Dry ice is simply solid CO_2. This can be used in large, well-known

applications, such as blast cleaning, food refrigeration and flash freezing, to small scale uses, such as fog machines and wart removal. Dry ice can also be used to preserve the human body until a funeral and is more environmentally friendly than embalming chemicals.

7. Oil

The largest single industrial use of CO_2 is for something called "enhanced oil recovery". Every year, about 50m tonnes of CO_2 are injected into oil reservoirs to push out around 20% of the original oil in place. Most of the CO_2 used for this application comes from natural CO_2 wells.

8. Plants

We know that plants are big consumers of CO_2. Through photosynthesis, plants convert CO_2 and water into hydrocarbons. But did you know that gardeners artificially increase the levels of CO_2 in their greenhouses to promote plant growth?

9. Pain killers

CO_2 has many pharmaceutical and medical applications, such as for the production of analgesic and anti-inflammatory drugs. For example, CO_2 is used in the production of salycilic acid that is the precursor to aspirin. It is also used for the stimulation of breathing when added to oxygen.

10. Aviation fuels

CO_2 is used extensively in research labs, as compressed gas, supercritical fluid or dry ice. In the lab where I work, we may not be using food grade CO_2, but we are nevertheless affected by the shortage. Our supplier

recently communicated to us that they are "no longer accepting routine orders". And this has consequences. For instance, in one of our research projects we use CO_2 together with waste biomass to produce aviation fuels.

So, I have come to realise that after all these years talking about CO_2 associated with global warming and climate change, I need to change my research narrative. Let me try this: our research is committed to ensuring that every day you have the CO_2 required for you to continue enjoying your lifestyle, from your preferred food and drink to riding your bike or even using a life jacket.

This article was originally published on The Conversation. Read the original article.

Provided by The Conversation

Citation: 10 products you may not realise are threatened by the CO2 shortage (2018, July 9) retrieved 5 May 2024 from https://phys.org/news/2018-07-products-realise-threatened-co2-shortage.html