How CO2 fits into a day and night out during the festive season

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Today, we are faced with ever-growing concerns surrounding greenhouse gases, and the recent Paris Climate Summit is an attempt to remedy this outstanding fact. Applying CO2 in industry – from beverage carbonation to food freezing, and metallurgical applications to usage as a weak acid – represent means of making money from the commodity, but not a net reduction of airborne emissions.

The latter must be a deliberate effort via a wide range of tasks, for example from EOR to diverting CO2 streams to aquifers, and from the potential for harvesting significant algae strains for biodiesel usage to enlarging the footprint of forests.

On the other hand, the merchant CO2 somehow touches all of us on a daily basis, and is intimately involved in the application, sale, efficiency and utilisation of the product, rather than concerns for CO2 emissions which add to the carbon footprint.

Carbon dioxide often gets a bad press, but there are plenty of reasons for this gas to get a better press, and the festive season involves many of them.

So, from this stark reality surrounding CO2 emissions versus making money from the commodity, let's go forward with an experience surrounding a Christmas season day – and many of the ways CO2 touches such a daily life.

Just imagine the following events taking place during this festive holiday...

The day itself

When beginning the day, anticipating the day of festivities, early morning often starts with a cup of tea or coffee. Say we have a decaffeinated cup of coffee or tea; in this application for the product, various manufacturers use CO2 as a solvent for the supercritical extraction of caffeine. The application is green, and eliminates toxic alternatives such as benzene.

Then, on to breakfast and lunch during the day – we often have soft drinks or water which are carbonated; beverage carbonation represents a significant percentage of today's merchant market. In preparation for the evening out, we pick up the dry cleaning, which was cleaned with a CO2 solvent rather than 'perc' – where CO2 is actually an environmentally friendly and healthier solvent than halogenated hydrocarbons.

Throughout the day, we have carbonated water and soft drinks, most of which contain CO2. Then, on to an evening out – we leave for dinner. The dinner is fabulous, and we begin with champagne, enhanced with carbonation in the manufacturing process.

The dinner guests include meat eaters and vegetarians; it is interesting to note the meat options received CO2 in one fashion or another, whether as a more humane method of rendering the animal ready for processing in the first application, or when processing and shipping the boxed meat product with CO2 snow to their destinations for sale or preparation. Some of the meat products were portioned and prepared in part, and used CO2 for chilling as well.

Then, we find out the vegetarian specialty received cryogenic chilling to maintain quality and form; further, the spices in the veggie dish were extracted via supercritical means, and ground with CO2 snow.

The meal includes appetisers, with cheeses embellished with CO2 in the packaging process, otherwise known as modified atmosphere packaging (MAP). We have guests who also receive decaffeinated coffee, beer, and soft drinks; most or all of which had the application of CO2 in one method or another. Dinner was excellent; and CO2 was a part of making this festive meal a dinner to remember with great food and beverages.

The evening entertainment

Next, we're off to see The Nutcracker playing downtown. Upon arriving at the grand, ornate theatre we notice how it has received a facelift; the granite and limestone looks almost new, and the test of time has disappeared. Clearly, CO2 blast cleaning was used to achieve this positive result in cleaning.

When waiting in the lobby cafe, we take in some beverages before the play. These beverages are carbonated, once again, and the champagne is excellent. We then take our seats, and enjoy the performance; the play includes the use of CO2 fog machines, which employ dry ice in the process of making 'CO2 fog'. After the play, we might have another outing with our favourite beverages and snacks.

At which point, one of those in the party reviews how many common things we touch, feel, eat and drink actually contain or use CO2; the list seems practically infinite and truly amazing. From the oil and gas we use to heat our homes to the fuel in our cars, there is a connection to CO2 in their recovery. The gasoline is blended with ethanol, and the ethanol plant supplying their product to the oil refinery also sells CO2 over the fence to a CO2 firm, for liquefaction, purification and marketing to many sectors of everyday industry.

Then, this gas expert reflects on many of the products made of metal that have been exposed to or treated with CO2 in metallurgy and welding applications, while many of the enclosed greenhouse operations use CO2 to enhance the growth of plants via photosynthesis; some of these plants and flowers are commonly found during the Christmas season. Many were in part a product of CO2 (greenhouse) enrichment.

The list goes on and on; how amazing it is, that an otherwise undesirable greenhouse gas is so readily employed to better the quality of our food and beverage products, as well as many of the things we use daily in manufacturing and processing. The electric power supplied to this market, for example, has interests in a cogeneration plant that partly recovers CO2 for a nearby EOR project; other plants are fired by natural gas.

Some of the gas fields have used CO2 frac work to produce natural gas as a fuel for the regional electric power. These applications in the energy sector touch everyone in the community – additional power used to light the festive ornaments and decorations around the city to make the season complete, has a CO2 affiliation.

So, the CO2 expert conveys to the group how CO2 has made this particular evening eventful and enjoyable; and the description along the way makes for an even more interesting day and evening out.

Have a truly enjoyable holiday, and keep in mind that part of making this holiday season so wonderful is CO2 in industry.