

Carbon storage? Not under my house!

By Aoife White - AP Business Writer

In the Modesto Bee and Merced Sun-Star, Tuesday, November 10, 2009

BARENDRECHT, Netherlands -- The people of this small Dutch town are not against pumping tons of carbon dioxide into the ground to fight global warming.

They just wish it wasn't right beneath their houses. "Who wants to live in Barendrecht if one of these CO₂ things is built?" said retiree Marianne van Heugten.

The carbon dioxide storage experiment by Royal Dutch Shell and the Dutch government is only one of a dozen such projects across Europe to test a technology that could potentially slash emissions of greenhouse gases such as carbon dioxide into the atmosphere by storing it underground.

That would allow countries that have lots of coal, such as China and the United States, to cut emissions while using the cheap but polluting fossil fuel - instead of imported oil.

But questions remain about the technology and its costs and risks even as the EU prepares to spend billions on it.

If it works, the technology would buy the world time in the fight against global warming by reducing emissions until cleaner energy sources can be developed - and help the EU keep big promises. Three weeks before global talks on a new climate change pact in Copenhagen, the EU says it is ready to reduce greenhouse gas emissions by up to 95 percent by 2050. The EU thinks carbon storage could shave up to 10 percent off global emissions by 2030 and 20 percent by 2050.

The European Union has pledged some euro1.05 billion in initial financing and will raise extra funding - likely some euro4.5 billion - from selling permits to emit greenhouse gases under a cap-and-trade system where companies need to pay to pollute more.

It is also calling for all new coal-fired power stations built after 2020 to be capable of capturing carbon - even if the technology isn't ready to be rolled out by then.

The Dutch government must decide whether to overrule Barendrecht residents objections or push forward with the unknown risks of storage under one of the most densely populated parts of Europe. Most current storage sites are in isolated areas.

The project would pump 10 million metric tons of carbon dioxide starting from 2011 into two depleted gas fields 2 kilometers (more than a mile) under the town. The gas fields are considered by some a safer choice than current experiments under the the North Sea and the Sahara Desert where a water-bearing rock layer, or aquifer, is being used.

It's only a trial; Shell says the Netherlands might need to store 30 million metric tons a year by 2025 and the entire country could potentially store 1 billion metric tons.

Some 43,000 people live in Barendrecht, a suburb 18 kilometers (12 miles) from Rotterdam and its port, Europe's busiest. Real estate agent Frits Markus says worries about the project could affect the average euro280,000 house price. People "will be scared that CO₂ will be stored under where they live, they will feel their houses will lose value, and will have trouble selling them."

Carbon dioxide, which provides the fizz in soft drinks, is naturally present in the atmosphere. Plants take it in and people breathe it out. But a sudden release of large amounts can kill by asphyxiation. Some 1,700 people died when a cloud of carbon dioxide escaped from a volcanic lake in Cameroon in 1986.

A slow leak would simply negate the costly efforts to store the gas. Greenpeace says this could happen if stored carbon dioxide mixes with water underground to form a weak carbonic acid that could corrode pipelines and rocks.

In Barendrecht, town council member Simon Zuurbier says he doesn't fear a blowout under his town, something he says is only likely to happen when carbon dioxide is being injected into the site. But he isn't sure the government will always be able to monitor "eternal storage."

Stuart Haszeldine, a geology professor at the University of Edinburgh, says "nothing like" a dramatic blowout would happen at a depleted gas field because the carbon dioxide would be injected with relatively little extra pressure and only the gas in the borehole - and not the entire site - would be likely to escape.

Such "confined space" oil and gas fields are far safer and easier to monitor, he says, because energy companies understand the geology better than storage at other possible sites like aquifers where the carbon dioxide can move sideways into the rock with more potential to leak.

Shell's plans to pipe the gas to Barendrecht would turn the town into a waste landfill, claim local campaign group CO2isNee. It's being labeled a dump, of sorts, that seems to anger locals the most.

"The value of houses, that's the real worry here," said resident Herman Bakker.

Barendrecht's town council refused to grant local permits and now worries that the Dutch government could overrule it by citing the national interest. Councilman Zuurbier warned against that.

"Here in Barendrecht there will never be any support for this," he said. "You need a general public support for the success of this new ambition. If you start this new policy with a conflict with Barendrecht ... that is a very nasty start for your general public acceptance."

Carbon capture and storage, or CCS, is the hope for the energy industry, European Commission environment official Jos Delbeke told a Brussels conference recently: "No realistic projections beyond 2020 give any hope of turning the global energy sector around without using CCS," he said.

Shell believes that the rock that safely harbored natural gas for millions of years could also be filled with carbon dioxide - and that Barendrecht could show that empty gas fields elsewhere could be used in the same way.

"We need to show you that it works, we need to show you that it's safe to store CO2 underground over long periods of time," said Graeme Sweeney, chief executive of Shell Renewables and chairman of the Zero Emissions Platform - a group of companies, nonprofit groups and academics lobbying for the technology.

Coal already provides 30 percent of the European Union's electricity, half of Germany's and 70 percent of China's power. But it is also the fossil fuel that puts out the most greenhouse gases and climate campaigners say Europe must give it up.

And the technology won't be cheap. Apart from the huge price tags for special equipment, European electricity producers warn it will drive up the cost of electricity because the process of capturing carbon dioxide means the plant must generate 30 percent more energy.

Even environmentalists can't agree. Stephan Singer of environmentalist group WWF-Europe says carbon capture must be explored because fossil fuels aren't going to disappear in the next 20 years. "Coal will unfortunately survive ... because of security of supply concerns which are bigger drivers than environmental concerns," he said.

Others such as Greenpeace see carbon capture as an expensive gamble with government money that should be used for renewable energy such as wind or solar.

"Our position is, if companies want to pay to research this technology, to prove that it's safe and effective and can work, they're more than welcome to do so," Emily Rochon of Greenpeace said. "But governments really need to focus on sustainable energy technologies that are available now."

"There are concerns about the ability to safely and permanently store CO2 underground," she said. "The oldest (one) has only been operating for 13 years, and so there's still a lot to learn about CCS."

Even if the technology works at an acceptable price, Rochon says "you still need the public to accept it."

Energy agency warns of falling investment

By Greg Keller - AP Business Writer

In the Merced Sun-Star and Modesto Bee, Tuesday, November 10, 2009

PARIS -- The global financial crisis has led to a dangerous drop in energy investment around the world which could choke off the nascent economic recovery, the International Energy Agency said Tuesday.

The warning from the Paris-based agency comes just a month ahead of the major UN climate conference in Copenhagen, where world leaders hope to agree on so-called climate finance to help developing countries cut emissions by switching from fossil fuels to cleaner energy such as wind and solar.

The EU has said that there should be a euro100 billion (\$150 billion) annual package of public and private finance by 2020 to help poorer nations develop green industries and adapt to climate change.

The IEA, a policy adviser to 28 mostly industrialized oil-consuming nations, estimates that the financial and economic crisis is responsible for a \$90 billion drop in global oil and gas investment this year, a 19 percent cut from 2008.

"Falling energy investment will have far-reaching and, depending on how governments respond, potentially serious consequences for energy security, climate change and energy poverty," the IEA said in its annual World Energy Outlook report.

The resulting drop in oil and electricity supplies could "undermine the sustainability of the economic recovery," the IEA warned.

Investment in renewable energy sources has been particularly hard hit, falling by about one-fifth in 2009 compared to a year earlier. Without the stimulus plans enacted by governments in response to the crisis, renewable energy investments would have fallen 30 percent this year, the IEA said.

"The financial crisis has cast a shadow over whether all the energy investment needed to meet growing energy needs can be mobilized," the IEA warned.

The agency estimates that \$1.1 trillion needs to be invested annually from now until 2030, for a total of \$26 trillion, just to meet energy demand on current growth trends.

Should governments adopt plans to limit greenhouse gas concentrations in the atmosphere to 450 parts per million of CO2 equivalent, an additional \$10.5 trillion needs to be invested over that time period, the IEA said.

SCIENCE NEWS

Globalization of air pollution

By Margaret Shapiro

Washington Post Tues., Nov. 10, 2009

Globalization applies to air pollution, too. Satellite observation, airplane sensors and data from various observatories have found that air pollution produced in Asia wafts over the United States, while U.S.-made pollution blows across the Atlantic to Europe. According to the National Research Council, which collected and analyzed the data from various sources, soot, ozone, mercury and organic pollutants such as the pesticide DDT were found in plumes of harmful pollutants that traveled from one continent to another, affecting air quality thousands of miles from their original sources.

The report notes that it can be hard to distinguish on the ground between domestic and foreign pollutants but that satellite observation and meteorological and chemical analysis can do it. For instance, the report describes an incident from 2004 when a polluted air mass was detected at Mount Bachelor Observatory in Oregon eight days after it left East Asia.

The health effects of pollutants vary: Ozone and particulate matter can cause respiratory problems that "are most worrisome from a health point of view," said Charles Kolb, chairman of an NRC committee that studied the data and recently released a report on it. Mercury and persistent organic pollutants such as DDT can gradually build up in farmland or watershed areas and make their way into the food chain.

[Bakersfield Californian, Letter to the Editor, Tuesday, Nov. 10, 2009:](#)

What about science?

I was disappointed in John Balmes' Nov. 1 Community Voices article, "Soot causes lung problems, period," asserting that particulates do indeed increase heart and lung illness, and that regulations must be enforced to reduce this "problem."

He ignores the fact that naturally occurring particulates pervade the atmosphere, and that all mammals have mechanisms for removing aspirated particulates. He offers no explanation on why diesel particulates are worse than natural ones.

Balmes claims truck drivers and railroad workers have increased rates of lung cancer and heart disease as proof of a particulate problem, but offers no data connecting particulates to increased disease rates. Have these workers been proved to breathe higher particulates than others? If so, how much higher? What other lifestyle factors of these workers are at work?

Balmes' assertion that diesel trucks and construction must "do their fair share" to clean the air suggests a bias to an unsupported conclusion; particularly since measurements continue to show our air has never been cleaner than it is today.

Balmes does concede that the theory of particulates impact on human health remains in dispute, but somehow implies that the controversy is illegitimate.

Too bad CARB has closed the investigation on this issue and moved ahead with regulation.

Barry Hanson, Bakersfield

[Bakersfield Californian, Letter to the Editor, Tuesday, Nov. 10, 2009:](#)

Fireplace police are out

On Nov. 2, as I opened my garage door to go to work, I noticed a San Joaquin Valley Air Pollution Control District pickup straight across the street in my neighbor's driveway.

I started to walk over to speak to him when he took off and sped out around to 24th street.

Shortly after this, I received a letter stating I was in violation because there was smoke coming out my chimney.

This is true. We have all been very sick, the heater was not working until late Sunday. There was a huge trunk size log on the fire Sunday which was still smoldering down.

This guy was not just driving around the neighborhood. This was kind of entrapment. He was in my neighbor's driveway.

The fine is \$50 or take a fireplace compliance training test.

If you want to fight it, you have to take a day off work and go Fresno. I have not figured that out either, as we have an office on 2700 M Street.

I guess I could have thrown a bucket of water in the fireplace and made more smoke and blackened the house up.

Margaret Oxford, Bakersfield

[Bakersfield Californian, Letter to the Editor, Tuesday, Nov. 10, 2009:](#)

That's a lot of fumes for one flu shot

On Oct. 30, the Department of Public Health sponsored a drive-through flu shot clinic on the local college campuses, which has been heralded a huge success.

I attended the event at CSUB and was in the traffic line for about 1 hour, 45 minutes before receiving the shot. The vehicle was idling as the line crept forward. The flyer stated that no walk-ups or bicycles would be allowed. Every person receiving the shot needed to idle in a vehicle. There were 3,400 vaccinations that day.

Assuming ours was the average idle time, and there were two people per car, then there were a total of 2,975 automobile-idle-hours. Approximately 0.16 gallons of gasoline are consumed per hour of idling,

which is 0.28 gallons used per vehicle (a total of 476 gallons). The chemical reaction of gasoline ignition results in about 19.4 pounds of CO₂ released to the atmosphere for every gallon of gasoline consumed in a vehicle. This means a total of 9,234 pounds (or almost 5 tons) of CO₂ was dumped into our air for that event on Friday.

These drive-through clinics are being conducted all over the country and hailed as an efficient way to get people vaccinated. The energy conscious citizen who would rather walk to the clinic or ride a bike may not receive these free flu shots.

I think in the future I will pay the \$25, save the hour and 40 minutes and dumping of toxic gas into the Bakersfield atmosphere.

Janet M. Garcia, Bakersfield

[Fresno Bee Earth Blog, Monday, Nov. 9, 2009:](#)

Tiny particles make seasonal appearance

By Mark Grossi

The cooler, calmer weather signals the start of the Valley's next air pollution concern: tiny bits of soot, dust and chemicals. In warmer weather, the problem is ozone, the main ingredient in smog.

The San Joaquin Valley violated the federal standard the first for days of November, but the air has been better for the last week.

Pay attention to the local air district's daily forecasts to find out if it's legal for you to burn wood in your fireplace or wood stove. There already have been several wood-burning bans.

The tiny pollution specks, as you may recall, are quite dangerous. They pass through the body's defenses and get into the lungs.

Such particles have been connected with lung and heart disease as well as early death.

The morning hours are generally riskier for vigorous, outdoor exercise, experts say. By afternoon, the particle levels begin the drop.

[Note: The following clip in Spanish discusses indoor plants and air quality. Some indoor plants have the capacity to eliminate pollutants from the air. For more information on this or other Spanish clips, contact Claudia Encinas at \(559\) 230-5851.](#)

Plantas de interior y calidad del aire

NeoFronteras, Friday, November 6, 2009

Algunas plantas ornamentales de interior tienen la capacidad de eliminar compuestos contaminantes del aire.

Una nota de la Sociedad Americana de las Ciencias Hortícolas nos sirve para recordar el problema que hay con la calidad del aire en el interior de las casas y su influencia sobre la salud, sobre todo ahora que la gente pasa el 90% de su tiempo en interiores y muy poco al aire libre.

Sorprendentemente el aire interior de los edificios de los países desarrollados tiene un 12% más contaminantes que el aire exterior en ciertas áreas. Ese aire se contamina con sustancias procedentes de las pinturas, barnices, pegamentos, muebles, ropa, disolventes, materiales de construcción e incluso del agua del grifo. La lista de compuestos orgánicos volátiles o COV que se pueden encontrar es larga: benceno, xileno, hexano, heptano, octano, decano, tricloroetileno, cloruro de metileno...

Se ha podido demostrar que estas sustancias provocan enfermedades en las personas que están expuestas a ellas en espacios cerrados. Entre las graves patologías que pueden provocar están el asma, náuseas y enfermedades crónicas de tipo neurológicas, reproductivas, de desarrollo... Incluso pueden provocar cáncer.

Según calculaba un informe de 2002 de la Organización Mundial de la Salud los contaminantes en espacios cerrados son responsables de 1,6 millones de muertes cada año, lo que representa un grave problema de salud.

Stanley J. Kays de University of Georgia, es el líder de un estudio publicado en HortScience en el que se comprobó la capacidad efectiva de las plantas ornamentales de interior para eliminar COV del aire en los espacios cerrados. A esta habilidad de las plantas de eliminar VOC del aire se le denomina "fitorremediación".

Además el estudio muestra cómo las plantas mejoran la salud psicológica. Colocar plantas en casa o en la oficina reduce el estrés, mejora la productividad y reduce los síntomas de las enfermedades.

Para comprender mejor la fitorremediación este grupo de investigadores probó la capacidad de 28 plantas ornamentales de interior de eliminar 5 componentes volátiles del aire: benceno o tolueno procedentes de recubrimientos, disoluciones, plásticos y humo de tabaco; octano procedente de pinturas adhesivos y materiales de construcción; tricloroetileno procedente del agua corriente, productos de limpieza, insecticidas y productos plásticos; y alfa-pineno procedente de pinturas y perfumes.

Durante los experimentos se cultivaron las plantas en un vivero durante ocho semanas y después se aclimataron durante 12 semanas bajo las condiciones habituales de los interiores de casas u oficinas antes de colocarlas en contenedores especiales de vidrios de atmósfera controlada.

Entonces las plantas fueron expuestas a los compuestos antes mencionados y se comprobó cómo disminuía su concentración a lo largo del tiempo. Después se clasificó a las distintas especies ensayadas como superiores, intermedias o pobres en su capacidades de eliminar COV del aire.

De las 28 especies comprobadas, Hemigraphis alternata, Hedera helix, Hoya carnosa y Asparagus densiflorus tenían la mayor capacidad de eliminación de compuestos orgánicos volátiles, siendo Tradescantia pallida calificada como superior en este aspecto.

El estudio concluye que la introducción de plantas ornamentales en interiores tiene el beneficio de mejorar la calidad del aire. Además de los beneficios para la salud, el aumento de plantas de interior podría tener un tremendo impacto positivo para la industria de plantas ornamentales.

Fuentes y referencias:

Nota de prensa.

Yang, Dong Sik, Pennisi, Svoboda V., Son, Ki-Cheol, Kays, Stanley J. Screening Indoor Plants for Volatile Organic Pollutant Removal Efficiency. HortScience, Published online 1 August 2009; in print 44: 1377-1381 (2009)

[Note: The following clip in Spanish discusses Coca Cola promises to plant 30 million trees in Mexico in the next five years, an initiative that will help recuperate the mass deforestations and increase the productivity in wildlife ecosystem.](#)

Coca Cola se compromete a plantar 30 millones de árboles en México

El Periodico de Mexico, Monday, November 9, 2009

México, (EFE).- Coca Cola sembrará en México 30 millones de árboles durante los próximos cinco años, una iniciativa que ayudará a recargar acuíferos, a recuperar la masa forestal y a incrementar la productividad de los ecosistemas boscosos y silvestres, informó hoy la compañía en un comunicado.

Este acuerdo contra el cambio climático fue presentado durante el Congreso Mundial de Tierras Silvestres WILD9 que se celebra en la ciudad de Mérida, en el sureste de México, desde el pasado viernes y que fue inaugurado por el presidente mexicano, Felipe Calderón.

"La iniciativa plantea una solución preventiva contra el cambio climático y destaca la protección a largo plazo del agua como fuente inagotable de vida, así como el encauzamiento de alianzas entre iniciativa privada y autoridades en pro de la reforestación", indica el comunicado.

Los árboles se sembrarán a lo largo de 25,000 hectáreas en zonas prioritarias del país, cerca de los acuíferos que abastecen a las principales ciudades mexicanas.

Este acuerdo, según el texto, "muestra el compromiso de Coca-Cola para devolver a la naturaleza toda el agua que utiliza en la elaboración de sus bebidas".

En su novena edición, WILD9 (el foro ambiental público e internacional más antiguo del mundo) reunirá a 1,500 participantes que debatirán sobre el cambio climático, la conservación transfronteriza, los corredores biológicos y el agua, entre otros temas.

En el foro participan representantes de Gobiernos, líderes de varias organizaciones no gubernamentales, empresarios, representantes del mundo de la ciencia, grupos indígenas, académicos y estudiantes.

A lo largo de estos días, los asistentes podrán disfrutar, entre otras cosas, de talleres, ponencias magistrales, presentaciones de informes, cursos o actividades culturales.