

Clean Air Technologies of the Future ...and the Present

Santa Barbara County
Air Quality News
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Energy from the sun splits water molecules into hydrogen and oxygen. A chemical reaction involving the hydrogen generates electric power, then the hydrogen recombines with oxygen to form water. The cycle continues.

A car fills up with hydrogen taken from methanol, ethanol, natural gas, gasoline, or water, and runs efficiently, powerfully, and silently for hundreds of miles – with almost no air pollution.

Businesses and households use small fuel cells to meet most of their power needs, with additional power available from nearby distributed generation plants to meet peak requirements. Waste heat from the systems is used to heat water for commercial laundries and other businesses.

These are some of the concepts and technologies discussed recently at Clean Air Technologies 2001, an international conference held in

November in Anaheim, hosted by the South Coast Air Quality Management District. Some concepts are visionary, some are surprisingly close to commercial implementation — and some are already in use.

“The next five years will determine whether we’ll have a paradigm shift in our society about the use of fuel cells,” said Professor Scott Samuelson, Director of the National Fuel Cell Research Center at the University of California at

Irvine, speaking to conference attendees. He added, “One of our challenges is to make the fuel cell technology more visible.”

Fuel cells produce electricity through chemical reactions involving hydrogen. The highly efficient process produces no air pollution. However, a small amount of air pollution can be associated with extracting the hydrogen from a variety of sources. Fuel cells can be used to supply energy in a wide range of applications.

Samuelson noted that a 200kW fuel cell has been in operation at the Hyatt Hotel in Irvine for several years, supplying 20 percent of the hotel’s power needs. Waste heat from the process is used to heat water for the hotel’s laundry operation.

Other types of applications for fuel cells include large and small power plants, ships and locomotives, trucks and buses –

(continued on page 2)

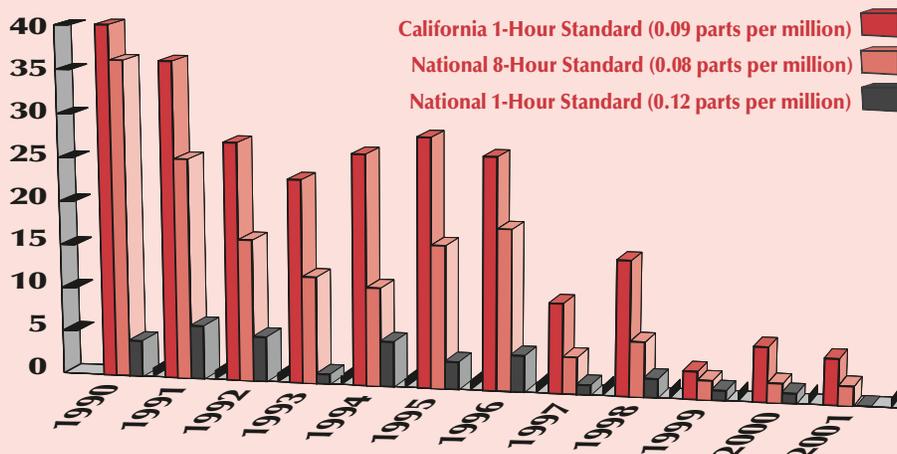
First Time Ever: Not a Single Federal Ozone Exceedance

This year we ended our smog season in Santa Barbara County without a single exceedance of the federal one-hour ozone (smog) standard for the first time since we started our air monitoring program in 1971.

As shown in the chart, this past smog season continued the trend of improving air quality over the past decade. However, in 2001, there were six exceedances of the state ozone standard, and three exceedances of the proposed federal eight-hour ozone standard.

Due to previous violations of the federal one-hour ozone standard, Santa Barbara County has been classified by the U.S. Environmental Protection Agency (USEPA) as a “serious” ozone nonattainment area. In November, the APCD Board approved APCD’s 2001 Clean Air Plan, which will now go to California Air Resources Board and on to the USEPA for approval, along with the request that our county be redesignated as an ozone attainment area.

Days Exceeding Ozone Standards In Santa Barbara County 1990-2001



Inside...

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- ❖ New Program for Auto Repair Shops
- ❖ Submit Data Online
- ❖ Growth Conference
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Clean Air Technologies (cont'd from cover)

and cars. Several auto manufacturers displayed prototype fuel cell vehicles at the conference (see photos). Most of the vehicles use hydrogen supplied from a hydrogen fueling station. Some manufacturers are developing cars that take in a variety of types of fuels — including gasoline — and extract the hydrogen from the fuel onboard the vehicle.

“The potential of the fuel cell is comparable to that of the

microcomputer,” said Prof. Dr. Panik at the conference. “Just as the microcomputer changed the world of information systems, we believe the fuel cell could transform the world of energy.” Panik is head of the Fuel Cell Project at Daimler Chrysler AG, and president and Chief Executive Officer of XCELLSIS GmbH, a fuel cell engine manufacturer.

Panik described a future of small energy “stations” that would distribute heat,

electricity, and vehicle fuel or power. “Multiple new product and new business opportunities come to mind when you start thinking of the fuel cell as tomorrow’s microchip,” he noted.

Conference attendees heard from other U.S. and international speakers on a variety of topics, ranging from children and air pollution (see article page three) to clean-air efforts currently underway in Mexico City and Beijing.

“Air pollution knows no boundaries — and so the effort to clean the air must be a worldwide effort,” said Dr. William A. Burke, Chairman of the South Coast Air Quality Management District.

Look for more articles on clean-air technologies in coming newsletter issues, and contact Mary Byrd at 961-8833 or byrdm@sbcapcd.org with suggestions.



Below: The Honda FCX V3, powered by a fuel cell combined with an ultracapacitor, which contributes to acceleration performance.



Left: APCD Director Doug Allard takes a ride in the Toyota FCHV-4, a prototype fuel cell hybrid vehicle demonstrated at the recent Clean Air Technologies 2001 conference. The FCHV-4, expected to be available in limited quantities in 2003, is powered by a 90kW fuel cell stack, and a secondary nickel-metal hydride battery that provides additional power.



Below: The NECAR fuel cell vehicle from DaimlerChrysler. The newest NECAR prototype fills up with methanol, and uses a reformer located onboard the vehicle to extract hydrogen gas for the fuel cell.



Children and Air Pollution

APCD Board Roundup

Following are the highlights of the October and November Board meetings.

October

- ✓ Executed a grant agreement for the purchase of a low-emissions boat engine.
- ✓ Received an update on staff efforts to work with the community to organize a countywide conference on growth, economic development, and jobs/housing balance.
- ✓ Accepted public comment on the Draft 2001 Clean Air Plan and Supplemental Environmental Impact Report, and directed staff to work with Vandenberg Air Force Base to resolve issues related to the Plan.
- ✓ Received a presentation from the Santa Barbara Energy Alliance.

November

- ✓ Executed a grant agreement for the purchase of a low-NOx diesel engine as part of the Onroad Heavy-Duty Repower Program.
- ✓ Authorized APCD's application to administer the retrofit portion of the California Air Resources Board's Lower Emission School Bus Program.
- ✓ Approved the 2001 Clean Air Plan and its Final Supplemental Environmental Impact Report including the California Environmental Quality Act Findings and Mitigation Monitoring Plan.
- ✓ Amended APCD Rule 323 - Architectural Coatings.
- ✓ Approved up to \$100,000 in Innovative Technologies Group funds for a Water-Based Cleaner Rebate Program for Automotive Maintenance and Repair Facilities.

Children breathe in more air pollution than adults — and health studies of air pollution don't always acknowledge this factor as much as they should, according to John R. Froines, Ph.D., Chairman, California Scientific Review Panel, and Professor and Director, UCLA Center for Occupational and Environmental Health, Southern California Particle Center, and Supersite.

Speaking at the Clean Air Technologies 2001 Conference, Froines remarked, "We have not given adequate attention to the differential susceptibility to toxic air contaminants in adults and children."

He pointed out that children receive much higher doses of air pollution than adults for a variety of reasons, including the fact that children have smaller lungs and breathe more often, play and exercise outdoors more, and are closer to the ground. He outlined one scenario, in which an active, small, mouth-breathing child with lung disease living near a source of pollution could have local doses of air particles greater than 4,000 times those calculated for an average adult.

Froines noted that several toxic air contaminants found in vehicle exhaust, especially diesel exhaust, have been identified as contaminants with potentially very damaging health effects for

children. Preliminary findings in the latest research in this area are showing an association between proximity to a freeway and the incidence of asthma in children, with the association more prominent in children with early onset asthma, he said.

Stressing the need for more research on toxic air contaminants and health effects, Froines commented: "The data we have on all these chemicals are thin... This is an emerging area that requires significant amounts of attention. The long-term cost with respect to children is of major consequence."

Cruising the Clean Air Avenue

APCD is offering the Cruising the Clean Air AVE (Alternate Vehicle Education) program to county-wide schools, grades 4-6. The free program features a classroom presentation

by APCD on air pollution, a hands-on demonstration of a gas-electric hybrid vehicle (pictured below), and additional information on energy and air pollution, and new kinds of cars and trucks.

For more information on this program, or to schedule a presentation, please call us at 961-8800, or email apcd@sbcapcd.org, and cruise the clean air avenue!





Air Pollution Control District Board

Supervisor Naomi Schwartz

First District

Santa Barbara County

Supervisor Susan Rose

Second District

Santa Barbara County

Supervisor Gail Marshall

Third District

Santa Barbara County

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Fourth District

Santa Barbara County

Supervisor Tom Urbanske

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City of Lompoc

Councilmember Gil Garcia

City of Santa Barbara

Councilmember Larry Lavagnino

City of Santa Maria

Councilmember Ed Andrisek

City of Solvang

APCD Board Calendar

*All meetings start at 2 p.m.
For final meeting agendas,
call the APCD Board Clerk,
961-8853.*

December 13, 2001

Board of Supervisors
Hearing Room
105 East Anapamu Street
Santa Barbara, CA 93101

2002 Calendar

January 17

Board of Supervisors
Hearing Room
511 East Lakeside Parkway
Santa Maria, CA 93455

February 21

Board of Supervisors
Hearing Room
105 East Anapamu Street
Santa Barbara, CA 93101

March 21

Board of Supervisors
Hearing Room
511 East Lakeside Parkway
Santa Maria, CA 93455

Community Advisory Council

The APCD Community Advisory Council meets the second Wednesday of every month at the Days Motor Inn in Buellton. The public is welcome. For more information, call Linda Beard, 961-8853.

Clean Air Holiday Tips

Light it Right

Fireplace fires are fun around the holidays – but they can produce a lot of smoke and fine particle pollution. Here are some ways to minimize air pollution from your fireplace fire.

- ❖ Use a gas log if you have one.
- ❖ Never burn trash, glossy paper (including and especially wrapping paper), or painted or chemically treated wood.
- ❖ Use manufactured fireplace logs, made from sawdust and wax. These produce less smoke.
- ❖ If you're burning wood, try to find dry, well seasoned wood (unfortunately, a lot of the wood that's commercially available is green and unseasoned, so this may be difficult).

Shop by Phone or on the Net

Stay out of holiday traffic and make your orders from home in peace by phone or on the Internet.

Shop by Bus

Santa Barbara MTD is offering the Shopper Express service, a non-stop express bus service between La Cumbre Plaza and downtown Santa Barbara shopping centers every 30 minutes during holiday shopping hours. Amtrak is offering two-for-one day trip tickets for shoppers coming from cities north of Santa Barbara up to (and including) San Luis Obispo, packaged with the MTD Shopper Express program.

For more information on the Amtrak promotion and coupon packet, call 687-6459 ext.10.



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Air Pollution Control District

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*On the Air is a bimonthly
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Community Programs Section of
the Santa Barbara County Air
Pollution Control District.*

*For further information on items
in this newsletter, or to be added
to our subscription list, please call
Bobbie Bratz, 961-8890 or
Email bratzb@sbcapcd.org.*

Our Vision: Clean Air



New Incentive Program for Auto Repair Shops

Auto repair shop owners can get funds to help buy new, less polluting cleaning systems, as part of a new program approved in November by the APCD Board. The program will reimburse auto shops one dollar for every four dollars they spend purchasing water-based auto parts cleaning or brake cleaning systems that are commercially available. A total of \$100,000 is available for rebates under the program.

“Owners will be required by regulations to phase in less polluting systems in the 2004-2006 timeframe. With this program, we can help them

phase in those systems now — on a voluntary basis,” notes Gary Hoffman, APCD Project Manager for the Water-Based Cleaner Rebate Program for automotive maintenance and repair facilities. He added, “They benefit by getting funds to help with this process, and our county’s air benefits, as we achieve emission reductions several years before we would through the regulations.”

Water-based cleaning equipment is already in use at auto repair shops throughout the Los Angeles area, which were required to transition to these systems years ago.



Dan Giers demonstrates a water-based auto parts washer currently in use at Malmcke Motors in Goleta.

APCD’s program will provide up to \$1500 for water-based parts cleaners, and up to \$300 for water-based brake cleaning systems. Any auto maintenance or repair shop in the county that wants to convert from hydrocarbon-based cleaning solvents, such as mineral spirits, to water-based cleaning systems is eligible for a rebate. Applicants must complete and submit an application to APCD before ordering new equipment to make sure that the equipment qualifies for the rebate, and to receive a rebate coupon.

Hoffman estimates emissions of VOCs (volatile organic compounds) will be reduced by about eight tons per year when this program is fully implemented, assuming about half the auto shops in the county convert to the new systems over the next several

years, and that rebates average \$1000 per shop. APCD is working closely with the local Automotive Services Council (ASC), who has agreed to promote the program to its member shops around the county. The program will also be promoted through other auto service organizations, and advertisements.

“We are inviting auto shop owners to act now to save money and pollution,” said Hoffman.

For more information on the program and an application, contact Gary Hoffman at 961-8818 or hoffmang@sbcapcd.org. A list of manufacturers of water-based cleaning systems is available on the South Coast Air Quality Management website at www.aqmd.gov/business/water.html.



Dan Giers of Malmcke Motors with APCD Project Manager Gary Hoffman.

Countywide Conference on Growth

APCD is working with the Santa Barbara County Association of Governments on a countywide conference on growth, economic development, and the jobs/housing balance, to be held in July of 2002 in Buellton.

“We want to bring people together to talk about the important growth issues facing our county, and to learn about techniques and ideas that could contribute to solutions,” noted APCD Director Doug Allard. A variety of conference attendees are expected, including: elected officials; city and county staff; professional developers and architects; business leaders, employers and economic development professionals; agricultural interests; and community groups and individuals who influence public policy.

The conference will present data on population growth, land use, emerging long-distance commute patterns, and economic development, and will bring in examples of communities successfully addressing the types of problems facing our county. Information and ideas will be shared on the following topics:

- ❖ Accommodating growth in an intelligent way
- ❖ Enhancing jobs/housing balance
- ❖ Promoting economic vitality
- ❖ Preserving critical open space, including agricultural lands
- ❖ Strengthening neighborhoods and communities

- ❖ Conserving energy
- ❖ Promoting a variety of transportation options
- ❖ Reducing the need to travel, by bringing work, home, and other destinations closer to each other
- ❖ Bringing together land use, transportation, and air quality plans.

For more information, and to be placed on the mailing list to receive conference registration information, please contact Bobbie Bratz at 961-8890 or bratzb@sbcapcd.org.

Funds for Environmental Technology Firms

Small technology and science companies can receive financial support for help developing and commercializing new environmental technologies from the federal Environmental Protection Agency's Small Business Innovation Research program. The program targets research to prevent pollution, reduce water and air pollution, manage solid and hazardous wastes, and improve environmental monitoring.

For more information, see www.epa.gov/ncerqa/sbir.

Coming Soon - Submit your Annual Report or Annual Emission Inventory Questionnaire Online

The APCD is developing a web-based application to allow regulated companies to submit Annual Reports and Annual Emission Inventory Questionnaires online (securely) via our website, starting in early 2002.

For more information, see www.sbcapcd.org. Contact Jim Fredrickson (below) at 961-8892 or fredricksonj@sbcapcd.org or Joe Petrini at 961-8894 or petrinij@sbcapcd.org with questions.

