BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT

ADVISORY COUNCIL
REGULAR MEETING

WEDNESDAY
JULY 12, 2006
10:00 A.M.

SEVENTH FLOOR BOARD ROOM
939 ELLIS STREET
SAN FRANCISCO, CA 94109

AGENDA

CALL TO ORDER

Opening Comments — Kraig Kurucz, Chairperson
Roll Call — Clerk

PUBLIC COMMENT PERIOD

Public Comment on Non-Agenda Items, Pursuant to Government Code Section 54954.3. *The public has the opportunity to speak on any agenda item. All agendas for Advisory Council meetings and Committee meetings are posted at the District, 939 Ellis Street, San Francisco, at least 72 hours before a meeting. At the beginning of the meeting, an opportunity is also provided for the public to speak on any subject within the Council's or Committee's purview. Speakers are limited to five minutes each.*

CONSENT CALENDAR

1. Approval of Minutes of May 10, 2006

COMMITTEE REPORTS

2. Public Health Committee Meeting of May 10, 2006 — Jeffrey Bramlett
3. Air Quality Planning Committee Meeting of June 14, 2006 — Stan Hayes
4. Technical Committee Meeting of June 14, 2006 — Robert Bornstein, Ph.D.
5. Executive Committee Meeting of July 12, 2006 — Kraig Kuruzc

PRESENTATION

6. From Science to Regulation--Air Quality Successes and Challenges in California

Robert F. Sawyer, P.E., Ph.D., Chairperson, California Air Resources Board, will provide a brief history on California's air quality regulatory program and its basis in sound science, and will discuss the major air quality successes and challenges facing the state."

AIR DISTRICT OVERVIEW

7. Report of the Executive Officer/APCO — Jack Broadbent

Mr. Broadbent will provide an update on pending and planned District activities, policies and initiatives.

OTHER BUSINESS

8. Report of Advisory Council Chair — Kraig Kurucz

9. Council Member Comments/Other Business

Council or staff members on their own initiative, or in response to questions posed by the public, may: ask a question for clarification, make a brief announcement or report on their own activities, provide a reference to staff about factual information, request staff to report back at a subsequent meeting concerning any matter or take action to direct staff to place a matter of business on a future agenda.

10. Time and Place of Next Meeting

10:00 a.m., Wednesday, September 13, 2006, 939 Ellis Street, San Francisco, CA 94109.

11. Adjournment

KK:jc

CONTACT CLERK OF THE BOARDS - 939 ELLIS STREET SF, CA 94109 **(415) 749-4965**
FAX: (415) 928-8560
BAAQMD homepage:
www.baaqmd.gov

- To submit written comments on an agenda item in advance of the meeting.
- To request, in advance of the meeting, to be placed on the list to testify on an agenda item.
- To request special accommodations for those persons with disabilities notification to the Clerk's Office should be given in a timely manner, so that arrangements can be made accordingly.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
939 ELLIS STREET, SAN FRANCISCO, CALIFORNIA 94109
(415) 771-6000

EXECUTIVE OFFICE:
MONTHLY CALENDAR OF DISTRICT MEETINGS

JULY 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)* - **CANCELLED**	**Wednesday**	**5**	**9:45 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)* - **RESCHEDULED TO JULY 17, 2006**	**Monday**	**10**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Executive Committee	**Wednesday**	**12**	**9:00 a.m.**	**Room 716**
Advisory Council Regular Meeting	**Wednesday**	**12**	**10:00 a.m.**	**Board Room**
Advisory Council Public Health Committee - **RESCHEDULED TO JULY 18, 2006**	**Wednesday**	**12**	**12:30 p.m.**	**Room 716**
Board of Directors Stationary Source Committee *(Meets 4th Monday of every Quarter)*	**Thursday**	**13**	**9:30 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**17**	**9:00 a.m.**	**4th Floor Conf. Room**
Advisory Council Public Health Committee	**Tuesday**	**18**	**1:00 p.m.**	**Room 716**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**19**	**9:45 a.m.**	**Board Room**
Joint Policy Committee	**Friday**	**21**	**10:00 a.m. – Noon**	**MetroCenter Auditorium 101 8th Street Oakland, CA 94607**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**26**	**9:45 a.m.**	**4th Floor Conf. Room**

AUGUST 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**2**	**9:45 a.m.**	**Board Room**
Advisory Council Public Health Committee	**Tuesday**	**8**	**10:00 a.m.**	**Room 716**

August 2006 Calendar Continued on Page 2

AUGUST 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Advisory Council Air Quality Planning Committee	**Wednesday**	**9**	**9:30 a.m.**	**Board Room**
Advisory Council Technical Committee	**Wednesday**	**9**	**1:00 p.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**14**	**9:30 a.m.**	**4th Floor Conf. Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**16**	**9:45 a.m.**	**Board Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**23**	**9:45 a.m.**	**4th Floor Conf. Room**
Board of Directors Public Outreach Committee *(Meets 4th Monday every other Month)*	**Monday**	**28**	**9:30 a.m.**	**4th Floor Conf. Room**

SEPTEMBER 2006

TYPE OF MEETING	DAY	DATE	TIME	ROOM
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**6**	**9:45 a.m.**	**Board Room**
Board of Directors Mobile Source Committee *(Meets 2nd Monday of each Month)*	**Monday**	**11**	**9:30 a.m.**	**4th Floor Conf. Room**
Advisory Council Executive Committee	**Wednesday**	**13**	**9:00 a.m.**	**Room 716**
Advisory Council Regular Meeting	**Wednesday**	**13**	**10:00 a.m.**	**Board Room**
Board of Directors Regular Meeting *(Meets 1st & 3rd Wednesday of each Month)*	**Wednesday**	**20**	**9:45 a.m.**	**Board Room**
Joint Policy Committee	**Friday**	**22**	**10:00 a.m. – Noon**	**MetroCenter Auditorium 101 – 8th Street Oakland, CA 94607**
Board of Directors Stationary Source Committee *(Meets 4th Monday of every Quarter)*	**Monday**	**25**	**9:30 a.m.**	**Board Room**
Board of Directors Budget & Finance Committee *(Meets 4th Wednesday of each Month)*	**Wednesday**	**27**	**9:45 a.m.**	**4th Floor Conf. Room**

mr
6/29/06 (3:14 p.m.)
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AGENDA: 1

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

DRAFT MINUTES

Advisory Council Regular Meeting
10:00 a.m., Wednesday, May 10, 2006

CALL TO ORDER – ROLL CALL

Opening Comments: Vice-Chairperson Glueck called the meeting to order at 10:00 p.m.

Roll Call: Present: Fred Glueck, Vice-Chair, Cassandra Adams, Sam Altshuler, P.E., Ken Blonski, Robert Bornstein, Ph.D., Jeffrey Bramlett, Harold M. Brazil, Irvin Dawid, Emily Drennen, William Hanna, Stan Hayes, John Holtzclaw, Ph.D., Janice Kim, M.D., Steven Kmucha, M.D., Karen Licavoli-Farncopf, MPH, Ed Proctor, Linda Weiner.

Absent: Louise Bedsworth, Ph.D., Kraig Kurucz, Chairperson, Brian Zamora.

PUBLIC COMMENT PERIOD: There were no public comments.

CONSENT CALENDAR:

1. **Approval of Minutes of March 22, 2006.** Dr. Bornstein moved approval of the minutes; seconded by Ms. Adams; carried unanimously.

COMMITTEE REPORTS:

2. **Public Health Committee Meeting of April 11, 2006.** Mr. Bramlett stated that the Committee received reports from Puget Sound and San Joaquin Valley air district staff on wood smoke abatement. The speakers noted that the process for addressing wood smoke requires patience over the long-term. Ms. Weiner added that the speakers urged that the discussion of wood smoke focus on smoke and not the combustion unit. Later today, the Committee will meet to receive presentations on wood smoke abatement from members of the Hearth Products, Patio & Barbeque Association and the North Bay Association of Realtors.

   Mr. Altshuler inquired if health risk assessment has ever been applied to wood smoke. Mr. Bramlett suggested that the Public Health Committee could follow-up on this question. Mr. Dawid inquired if there is a ban on outdoor burning of leaves in the Bay Area. Mr. Bramlett replied that the District's Regulation 5 on Open Burning prohibits this kind of activity.

3. **Air Quality Planning Committee Meeting of April 12, 2006.** Mr. Hayes stated that the Committee received a presentation from Abby Young from the International Council on Local Environmental Initiatives—now known as Local Governments for Sustainability—on climate protection activities at the local level. Mr. Hayes referred the Council members to the minutes in today's agenda packet which set forth the details of the presentation. The Committee discussed possible areas of climate protection activities for recommendation to the full Council.

One topic that has emerged is the possible creation of a carbon footprint for the Committee. Environ International Corporation has conducted a corporate carbon footprint—the emissions contents of which are comprised primarily of employee travel data—in attempting to offset its carbon emissions. In applying this approach to the Committee, climate protection and the setting of an emission reduction target would be brought to the personal level using the ICLEI process. Mr. Dawid noted that the Loma Prieta Chapter of the Sierra Club has posted a carbon footprint calculator on its website. He added that a number of local governments have dropped out of the California Climate Action Registry. This is an issue that requires further investigation.

4. **Report of the Technical Committee Meeting of April 12, 2006.** Dr. Bornstein stated the Committee received a presentation from Amy Luers of the Union of Concerned Scientists (UCS) on global warming in California. She reviewed the impacts of projected higher temperatures on various environmental, agricultural and economic sectors in the state. The details of the lecture are provided in the minutes in today's agenda packet. The Committee's future directions—based on the topics of climate change, particulate matter (PM) research and the Community Air Risk Evaluation (CARE) program—that were adopted at the Council Retreat in January, will be discussed in the context of where these overlap with the work of the other Committees. Mr. Hayes inquired as to the status of the Community Risk Air Evaluation (CARE) program. Peter Hess, Deputy APCO, stated that the preliminary draft results should be ready for review by the end of July, and the AQPC and Technical Committees should consider jointly receiving a presentation on these results at that time.

5. **Report of the Executive Committee Meeting of May 10, 2006.** Vice-President Glueck stated that the Committee met earlier this morning and briefly reviewed today's Committee reports.

PRESENTATION

6. **California Goods Movement Action Plan.** Cindy Tuck, Assistant Secretary for Policy at the California Environmental Protection Agency (Cal-EPA) presented "California Goods Movement Action Plan," stating that Cal-EPA is developing this Plan with the California Business Transportation and Housing Agency (CBTHA). The concept is to develop an integrated Plan that addresses infrastructure, public health, environmental impact mitigation, community impact mitigation, workforce development, and port security. A cabinet level work group was formed and is chaired by Secretaries Alan Lloyd of Cal-EPA and Sunne Wright McPeak of CBTHA.

   At the end of 2004, a policy statement for the Plan was issued which declared that "the State's economy and quality of life depend on the efficient, safe delivery of goods to and from our ports and borders. At the same time the environmental impacts from goods movement activities must be reduced to ensure protection of public health." Public health and environmental issues must both be addressed. Goods movement is not limited only to ports: it encompasses the delivery to ports and the subsequent distribution of goods throughout four major corridors in California.

   Listening sessions were held around the state early in 2005, and later in September a Phase I "Foundations" report was issued which addressed four key regions and corridors in the State: Los Angeles-Long Beach, Bay Area, Central Valley, and San Diego. The assessment took account both of port and rail activities, and addressed various needs and challenges in infrastructure, environmental impact mitigation, community impact mitigation, workforce development, security and public safety, and innovative finance and alternative funding.

Input from regulators and the community was sought on all of these categories. Emission source information was obtained for cargo handling equipment, ships, harbor craft, locomotives, diesel trucks and airplanes. Trucks are now the largest source of emissions, but these will be surpassed by emissions from ships by the year 2020.

The preliminary findings on air pollution issued in the September 2005 report indicate that even if no growth is expected from trade, the current emissions from goods movement constitute a significant contribution to air pollution. Another finding was that future emissions are expected to increase unless aggressive action is taken to turn current trends around, especially as the number of containers coming into California is expected to triple by 2020. With regard to health effects, the report projects an increase in cancer risk and non-cancer respiratory and cardiovascular effects. The report also forecasts a significant increase in the cost of mitigating adverse air quality effects. A December 2005 estimate of the cost of mitigation ranged between $2-5 billion, while a revised estimate for the statewide Plan increases this to $6-10 billion.

The Phase II portion of the Plan identifies the actions needed to address the challenges presented in the Phase I report, and the Action Plan was the outcome of this analysis. The public process includes the Governor, to whom the Cabinet Work Group reports. In turn, the Integrating Work Group—which is comprised of five groups: Public Health and Environmental Impact Mitigation, Infrastructure, Innovative Finance & Alternative Funding, Homeland Security & Public Safety, Community Impact Mitigation and Workforce Development—reports to the Cabinet Work Group. The Emission Reduction Plan that has been developed by the Air Resources Board (ARB) is integrated into the Public Health & Environmental Impact Mitigation group, and is an added key component for environmental mitigation and public health issues. The Integrating Work Group has been regularly conducting meetings and will meet again in June. Meetings have been held in more highly impacted communities near ports and rail yards and public comment has been received. There are approximately 40 participants in this Group.

Phase II produced the "Framework for Action" which was the predecessor document to the Action Plan. Three drafts were issued, in December 2005, February 2006 and March 2006. The report addressed environmental challenges and included summary information on air quality, water quality and hazardous waste. It also included an overview of issues as background, draft principles developed by the Work Group, draft criteria for how actions will be selected, draft metrics for the evaluation of actions after implementation, and a draft list of actions. More specifically, on the draft actions, they cover infrastructure, public health and environmental mitigation, community impact mitigation and workforce development and public safety at ports.

The ARB Emission Reduction Plan is extensive and its first draft was issued in December 2005. It was revised in March and approved by the ARB on April 20, 2006. It addressed diesel PM, nitrates and sulfates that form particles in the atmosphere, and ozone—with a focus on the contribution of nitrogen oxide (NOx) and reactive organics to ozone formation. The Plan estimates that diesel PM is the pollutant of the greatest concern in terms of statewide emissions from goods movement, with 70% of statewide diesel emissions deriving from goods movement.

In terms of health issues, ARB studies in October of 2005 calculated increased lifetime cancer risk for the population near the ports of Los Angeles and Long Beach. An ARB study in October of 2004 found increased life cancer risk for the year 2000 at the Roseville rail yard.

The goals of the Emission Reduction Plan are:

- By 2010, to reduce emissions from goods movement to the greatest extent possible and at least back to 2001 levels.
- By 2015, to reduce South Coast NOx 30% and by 50% in 2020 (these are preliminary targets).
- Apply strategies statewide to aid all regions in attaining standards. (This demonstrates that the ARB is a statewide plan).
- Reduce diesel PM cancer risk by 85% by 2020.
- Reduce localized risk in communities adjacent to goods movement facilities. (This goal is also consistent with the District's CARE program).

The Emission Reduction Plan sets forth strategies to achieve its goals, and to take the elements from the goods movement plan and incorporate them into the State Implementation Plan (SIP) elements by early 2008. The next steps are to revise the March 24 draft of the Plan, release it in June, convene an Integrating Work Group meeting in June, and then finalize the Action Plan.

There are linkages to this effort in the SB1266 bond package (Perata) which proposes $1 billion for emission reductions from activities related to movement of freight along trade corridors. It is intended as incentive funding for areas that are not reached by broader regulatory measures. These funds must be appropriated by the Legislature, which will promulgate allocation criteria.

In reply to questions, Ms. Tuck stated:

- cost/benefit analysis for the measures proposed in the Plan is a future feature of the rule-making. There will be a "price tag" for each infrastructure project. However, the listed projects are still in draft form and have not yet been approved.
- A chapter on greenhouse gases (GHGs) may be included in the report, but the focus was on criteria pollutants. The State has a Climate Action Team, which has discussed the mandatory reporting requirement for GHGs from local entities.
- emergency response issues for the ports are being worked on by a Group in the plan development that is addressing port security and emergency preparedness.
- among the largest element of the $6-10 billion in air pollution mitigation costs is the clean-up of truck transport to and from the ports.
- the lack of regulation of ship emissions even at the international level is of concern, and a proposal under consideration is placing conditions on ships that come into the ports.
- there is a need to increase the placement of containers on trains, and to improve railroad track beds as well as the placement of containers on trains at the dock. CARB is promoting these. Review of short sea shipping is underway, pending further environmental evaluation.
- the report addresses "other critical issues" in Chapter VII regarding land-use, and this addresses the issue of sprawl and increased densification for in-fill development.

- diesel emissions will decrease by 2020 due to new and more stringent truck emission standards and fleet turnover.

- coordination of ship arrivals with the ebb and flow of tides has been considered for port expansion project work in the City of Pittsburg.

- the estimation of environmental mitigation costs did take into account cost savings on health care in the context of avoiding lost work days. The Plan proves to be cost-effective when its medical benefits are factored into the overall cost/benefit analysis.

- technology is being considered as a mitigation measure by the Ad Hoc Group on Technology with regard to effective movement of goods at the port. Ms. Weiner noted that at a recent climate change meeting in San Francisco, a panel addressed this issue and provided an update on the relevant research currently being conducted in Silicon Valley.

AIR DISTRICT OVERVIEW

7. **Report of the Executive Officer/APCO.** Jack P. Broadbent, Executive Officer/APCO, introduced Gayle B. Uilkema, Chair, Air District Board of Directors, who stated:

- the Budget & Finance Committee today forwarded the proposed Budget for FY 2006-07 to the full Governing Board for review and approval.
- the Governing Board is sensitive to the issues the Council is discussing, including diesel emissions, refinery flaring, and emissions from port activities.
- the Governing Board appreciates the Council's devotion of time and effort in serving the Air District and in providing advice to the Governing Board. The Council should reach out to the public and be reflective of the public's concerns.
- in county supervisory activities, there is a common theme of health, safety and welfare. The Council needs to keep these criteria in mind in its deliberations and recommendations.

Mr. Broadbent stated that:

- the District is gearing up for the summer Spare the Air program. It will cover three full work days of free commutes with public transit funding. This effort is being conducted in partnership with the Metropolitan Transportation Commission (MTC) and almost every transit operator in the Bay Area. The free transit days will be offered for those days when an ozone excess is predicted the previous day. With regard to the wintertime Spare the Air Tonight season, no advisories were called as PM levels were low due to the high level of precipitation.
- the proposed Budget will continue the core programs of the District, with slight (8%) fee increases contemplated for certain schedules on certain schedules.
- due to air quality concerns at the Port of Oakland, the District has started to engage the Port in collaboration with MTC and local communities to discuss the pooling of resources to mitigate port-related emission activities and develop a Bay Area Goods Movement & Air Quality Plan. This will complement the State plan. The District has funded Carl Moyer projects in the Port, and will endeavor to get more trucking activities involved in retrofits.

Jean Roggenkamp, Deputy APCO, stated that:

- the Program Manager position for the CARE program has been filled by Dr. Phil Martien from the District.
- for the District's Climate Protection Leadership Program, the Board adopted a six-initiative approach. It includes moving forward with a climate protection planning summit in September based on recommendations from a steering committee which has met three times and will meet again. The District has released an RFP to identify and evaluate different GHG emission reduction processes and technologies, as an informational tool. Staff is reviewing the proposals and a contractor will be selected soon. The District will also integrate climate protection into its other programs. Staff will include an energy and climate protection component in the District's comment letters issued in the context of the California Environmental Quality Act (CEQA) process. For grant programs under the Transportation Fund for Clean Air (TFCA) the District will evaluate both CO_2 emissions and criteria pollutants, and on Monday of next week, the Mobile Source Committee will consider adopting a CO_2 criterion for inclusion in ranking and evaluating TFCA projects.

Mr. Hess stated that the State Legislature has removed exemptions from the agricultural permit process, and staff has now put together a regulatory package to include agricultural operations in its permit system. Workshops on the new rule are being planned for the near future. He added that at the June meeting of the Air & Waste Management Association in New Orleans, he will host an open house in the Presidential Suite at the Hilton.

In reply to Council member questions and comments, executive management replied as follows:

- the deferral of the CARE pilot project is due to the District's current focus on the emission density graphs for the region and the assessment of areas with high potential for exposure to emissions. There are also new issues regarding the Port of Oakland that must be reviewed in the immediate future. The pilot project is therefore going to be held in abeyance.
- proposed new guidelines for the Transportation Fund for Clean Air (TFCA) will be presented to the Mobile Source Committee on May 15, and have received public comment. The largest change is that state law governing TFCA funding now allows both private and public agencies to submit projects for funding from the Regional TFCA fund.
- with regard to controversy in Napa County over the absence of a $PM_{2.5}$ monitor, the District has used its air quality models and larger measuring devices to assess the PM issues there, which is the only county to date that has not adopted the District's model wood smoke ordinance. The District will continue its outreach to that county regarding the ordinance.
- staff will continue to review the literature on the significance of ultrafine particles in exposure to the public, including the information provided at a recent conference at the South Coast AQMD on ultrafine particles. There is a great deal of research currently regarding nanoparticles and the measurement of PM not on the basis of a mass basis but on the number of particles per a specified volume of air. The Advisory Council may want to consider receiving presentations on the state of research in this area and prepare its own recommendations. Mr. Altshuler volunteered to compile some summary slides and make a presentation for the Council after the South Coast AQMD completes the Proceedings disk.

Ms. Weiner added that EPA held three conferences on the PM standards and is considering making the standards more stringent. Many speakers addressed the EPA at these conferences. There is a wealth of expertise on PM in the Bay Area. Mr. Hayes urged the Council to receive a presentation on new developments in the PM field. PM is a key element in the Council's work plan this year. There is enormous potential implications for source attribution and understanding of the emission inventory if the form of the standard shifts from a mass basis to a particle per volume ratio.

- the CARE program will assess which communities are disproportionately impacted. The results could lead to the adoption of other policies which may be directed to specific communities to help reduce their relative exposure risk and increase funding for targeted emission mitigation. The District participated in the creation of ARB's guidelines for land-use, exposure and siting. The Bay Area is an increasingly dense area, in which there is advocacy for in-fill development and affordable housing near transit stations and hubs.

OTHER BUSINESS

8. **Report of Advisory Council Chair.** Vice-Chairperson Glueck stated there was no report.

9. **Council Member Comments/Other Business.** There were no further comments.

10. **Time and Place of Next Meeting.** 10:00 a.m., Wednesday, July 12, 2006, 939 Ellis Street, San Francisco, CA 94109.

11. **Adjournment.** 11:58 a.m.

James N. Corazza
Deputy Clerk of the Boards

AGENDA: 2

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

DRAFT MINUTES

Advisory Council Public Health Committee Meeting
12:30 p.m., Wednesday, May 10, 2006

1. **Call to Order – Roll Call.** Chairperson Bramlett called the meeting to order at 12:30 p.m. Present: Jeffrey Bramlett, Chairperson, Cassandra Adams, Steven Kmucha, M.D., Karen Licavoli-Farnkopf, MPH, Linda Weiner. Absent: Janice Kim, M.D., Brian Zamora.

2. **Public Comment Period.** There were no public comments.

3. **Approval of Minutes of April 11, 2006.** Dr. Kmucha moved approval of the minutes; seconded by Ms. Adams; carried unanimously.

4. **Wood Smoke Abatement Efforts.** John Crouch, Director of Public Affairs of the Hearth, Patio & Barbeque Association (HBPA) presented "Wood Smoke Abatement Program Applications," stating that he would focus on developments in the field of appliance change-outs, both locally and nationwide. He indicated that hearth products fall into two categories: (a) heating (wood stoves, pellet stoves, gas hearth products, and others—such as electric, oil, and corn stoves) and (b) decorative products (wood – open fireplaces, and also gas and electric appliances). With respect to the latter, an open wood burning fireplace is primarily a decorative feature in most houses. In wood burning surveys, some individuals note that their fireplace is primarily decorative but also a secondary heating source. Others may only use their fireplace on major wintertime holidays. A number of heating appliances come as a free-standing item or as an insert for a fireplace, and are known as "aftermarket" products. Inserts include a gas heating element, and a pellet or woodstove insert. In phone surveys of homes, responses vary considerably such that residents identify a fireplace with an insert as a single unit, or as two separate units.

   Operating assumptions for air quality and hearth products from the hearth products industry are that metropolitan areas contain substantially more fireplaces than wood stoves or inserts but that the inserts are also used substantially more than open fireplaces. Some open fireplaces are not used at all. Approximately 85-90% of wood stoves on a nationwide basis are pre-Environmental Protection Agency (EPA) certified. As much as 50% of Bay Area wood combustion units are not certified. In 1990, the HBPA conducted a change-out program in Seattle, and a similar program in Northern California/Southern Oregon. There have been modest industry discounts provided for such change-out programs but little public funding has been forthcoming. The California Energy Commission has offered funding for change-out programs for emission offsets.

   The EPA has created a "change-out team" to coordinate change-out programs nationwide. It models its approach on diesel engine retrofit programs. It has held workshops, at times co-located with HBPA trade shows, on wood appliance change-out products and strategies.

EPA has reached out to state and local tribes in this program, and has upgraded its wood burning data on its website. It has issued guidance on State Implementation Plan (SIP) credits. It also has instituted a national woodstove change-out campaign with program elements that focus on raising awareness, developing partnerships, targeting specific areas and providing tools for program work. EPA uses a slide at the National Chimney Sweep Guild to educate viewers on the importance of addressing wood smoke emissions. It indicates of that approximately 80% of fine particle ($PM_{2.5}$) pollution derives from woodstoves. This total exceeds the total $PM_{2.5}$ emissions from petroleum refineries, cement manufacturers and pulp and paper plants.

On-going or completed woodstove change-out campaigns in 2005 were conducted in Libby, Montana; Southwest Pennsylvania; Washoe County, Nevada; Butte County, California; Christiansburg, Virginia; Darrington, Washington; Whatcom/Island County, Washington; Swinomish Tribe, Washington; Questa, New Mexico; Yakima, Washington; and Delta County, Colorado. Similar campaigns are planned in 2006/2007 in Washington County, Ohio; Sacramento and San Joaquin, California; Oakridge, Oregon; Christiansburg, Virginia; Whatcom/Island County, Washington; Swinomish Tribe and Yakima, Washington; Libby Montana, Greenville; South Carolina, Hagerstown; Maryland, Central Washington, Maine; Rutland, Vermont; New Jersey, Minnesota; Catawba County, North Carolina and Oneida Nation, Wisconsin. The HBPA is soliciting interest in a "state wide" change-out this winter in California and would welcome District participation. In 1999, the District got PG&E to include a two-sentence statement on electricity bills in Northern California/Central California that resulted in the change-out of many wood stoves. This was not costly for the District.

In Libby, Montana there is a "Whole Town" change-out of wood burning appliances underway. As there is no natural gas in Libby, there is considerable wood burning during cold weather that contributes to 82% of total $PM_{2.5}$ in the area. Through assistance from the HBPA, the EPA and federal funding, all stoves in Libby will be changed-out over a two-year period. In late 2007, data from "before" and "after" PM monitoring will be analyzed and compared.

Key elements of wood stove change-out programs include the verification of the emission reductions, the provision of financial incentives for change-out, and public education. In Libby, the HBPA is providing free-of-charge over 300 EPA-certified stoves to low-income families. Some public resources are being applied in the form of Supplemental Environmental Projects (SEPs) funds as well as emission offset programs.

Rising energy costs have created major challenges to wood burning appliance change-out programs because there is a greater interest in supplementing home heating with wood due to anticipated increases in home heating costs. Old wood stoves and inserts do not break and consumers do not shop for replacements as with electric appliances. Incentives must therefore be larger to trigger change-outs. However, with the heightened awareness about increasing energy and fuel costs, access to the media on heating and energy costs is much easier.

Mr. Crouch added that change-out campaigns, in order to maximize effectiveness, must be sponsored by both public and private funding. Media attention is also crucial to program effectiveness. Targeted funding of change-out programs to areas with higher incidences of asthma is an area for future consideration. EPA certification applies to wood stoves, but not to fireplaces, pellet stoves, masonry heaters and outdoor wood furnaces. To expand the jurisdiction of certification over other appliances and units, EPA would have to reopen its new source performance standards process.

Kathy Hayes, Government Affairs Director, North Bay Association of Realtors, stated that having participated in local community discussions on the change-out of wood burning appliances in the home at the point of its sale, and having observed how local government policy is moved forward on this field, she believes that point-of-sale is both challenging and problematic. It not only takes a long time to implement but also places a huge responsibility and liability on the real estate industry. It takes 25 to 40 years for an entire housing stock to turnover, and this does not provide a rapid response to air quality, health and safety issues. It also leads to the inequitable treatment of property, with one house regulated and another house unregulated. It also makes the realtor a *defacto* employee of whatever agency or group is imposing the rule, and the work that is done is without compensation for the real estate representatives. Evaluation of wood burning appliances in the home, under any wood smoke ordinance with a point-of-sale provision, becomes a liability on the real estate community and becomes an inherent part of the escrow process. It encumbers a real estate transaction with additional inspections, inspection fees, and other processes which could take multiple weeks to schedule and accomplish, depending upon the jurisdiction.

Point-of-sale has had various applications. The City of Santa Rosa has chosen different paths to address health and safety, or water conservation issues, and has not included point-of-sale in these. The City of Marin adopted a point-of-sale ordinance for water conservation devices in homes, but it later repealed it as it was too slow, too bureaucratic and too great a burden on realtors. The Las Galinos Municipal Service District repealed a similar point-of-sale approach for water conservation units. The City of Sebastopol adopted a point-of-sale program for wood burning appliances in homes that included a community wide "don't use" policy. This posed a major problem for its real estate community, which found itself saddled with work that belonged to the City: preparing forms for implementing the ordinance and setting deadlines for the submission of paperwork. The City had not developed any guidance for the implementation of the policy, and some procedures that the City had committed to developing have yet to be developed. Liability issues created by the policy lead to lawsuits against realtors. Many escrows were completed without any wood burning appliance change-out occurring. Although realtors were not the moving party in the point-of-sale requirement, they were nevertheless named a party to a lawsuit concerning certain property sales.

The City of Santa Rosa instead implemented a community wide "can't use" policy. It did not ask for a wood burning appliance insert, but instead created an honor system approach to compliance. Santa Rosa took its lead from a model that advocated water conservation devices, with similar discussion attempting to provide incentives for the purchase and installation of water-conserving toilets on a community-wide basis. Citizens could pick up free toilets from the city and have them installed. Paying the plumber to install the water-saving devices turned out to be less expensive than the overall costs involved in the point-of-sale approach.

Several years ago the City of Truckee passed a point-of-sale ordinance. One-third of all the homes had a woodstove or fireplace insert that was not EPA-certified. The implementation date of the point-of-sale ordinance was extended several times due to the time and expense to train staff and to discuss the implementation problems with the real estate community. Since that time the City of Truckee reconsidered and rescinded the ordinance and elected instead to require the change-out of wood burning appliances in all homes over a five-year period. The City of Truckee will be divided into five quadrants, and priority for change-out will be given to those areas determined to have the largest wood smoke problem. Within five years, the entire community will be retrofitted. This will allow the air quality staff and inspectors one

concentrated area per year on which to focus. Homeowners must certify that they are in compliance. A non-certified stove must be replaced or removed, and regulatory staff will then have to follow-up to ensure this is done.

Community education must also be a part of any Bay Area-wide campaign. Although one speaker who addressed the Public Health Committee in April opined that the public is well educated on wood smoke issues, that viewpoint may not be shared by others. Ms. Hayes added that she has learned a great deal over the last several years about wood smoke on both a family and professional level, and the choices she would make now about wood smoke are different from ones she would have previously made. The need to get quality information out to the public about wood smoke, and in a coordinated fashion with all stakeholders to the process, cannot be sufficiently emphasized. With the right data, citizens will make informed choices.

It is premature to move into any regulatory mode without having maximized public education. Ordinances such as the one implemented in Sebastopol are less preferable to a universal change-out program such as the one which the City of Truckee is implementing. The question of accurately measuring the impact of any program or regulation is important to the total wood smoke abatement effort.

Ms. Hayes concluded that there are alternatives to point-of-sale that treat every home equally and provide a much bigger result for the investment in dealing with wood burning appliances. The real estate community is interested in working with the Air District to come up with an approach to wood smoke abatement that does not unduly impact realtor industry.

In reply to questions, Ms. Hayes noted that in any discussion with regulators, two issues must be addressed: the use of the real estate community staff as *defacto* employees to the regulatory process, and the matter of liability in suits over housing and property. From a health and safety point of view, point-of-sale is not an effective or timely approach. A more viable approach would be phased-in, beginning with education and moving to a "can't use" policy, and thereafter to a universal change-out program that moves through a community and indicates to residents that if they obtain a certified device, they have plenty of time in which to make the change, and that financial incentives are available to them in order to achieve this goal.

Chairperson Bramlett directed that at the next meeting the Committee will discuss an initial draft of possible recommendations which will be refined and then presented to the Council.

5. **Committee Member Comments/Other Business**. There were none.

6. **Time and Place of Next Meeting.** The June 13, 2006 meeting was canceled. Chairperson Bramlett directed that members be surveyed as to their availability on future suggested dates.

7. **Adjournment.** 2:04 p.m.

James N. Corazza
Deputy Clerk of the Boards

AGENDA: 3

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

DRAFT MINUTES

Air Quality Planning Committee
9:30 a.m., Wednesday, June 14, 2006

1. **Call to Order – Roll Call.** Chairperson Hayes called the meeting to order at 9:40 a.m. Present: Stan R. Hayes, Chairperson, Ken Blonski, Irvin Dawid, Emily Drennen, Fred Glueck, John Holtzclaw, Ph.D., Kraig Kurucz, Ed Proctor. Absent: Harold Brazil.

2. **Public Comment Period.** There were no public comments.

3. **Approval of April 12, 2006 Minutes.** Ms. Drennen moved approval of the minutes; seconded by Dr. Holtzclaw; carried unanimously.

4. **Marin County General Plan Update:** Dawn Weisz, Sustainability Planner, County of Marin, stated that she would review the County's update of its General Plan and Environmental Impact Review process that are addressing climate change concerns. She added that every municipality in the country should have a general plan that is updated every decade.

   The first Marin Countywide Plan (CWP) was adopted in 1973 and was seen as a visionary document. It established environmental corridors—coast, inland rural, and the city-centered—which allows concentrations on jobs, housing and transit within the County, and assists in identifying and defining air quality issues. Another corridor ("Baylands") will be set aside primarily as wetlands and open space, with some flexibility for sparse development.

   Marin County has a population of 250,000 people, with 84% of its land being open space and parks, 11% developed and 5% is potentially developable—although much of the latter is hillside or marsh. The theme of the CWP is planning sustainable communities, with guiding principles that emphasize alignment of the built environment and socioeconomic activities with the natural systems that support life; adaptation of human activities to the constraints and opportunities of nature; and meeting the needs of the present and the future.

   In 2000, the County conducted an analysis of its "ecological footprint"—that is, of how much land is used to provide resources per person—and calculated an average of 24.7 acres per person. The national average is 24 acres per person. Italy's ecological footprint is 9.5 acres per person. The average ecological footprint on the planet is four acres per person.

   The composition of the County's greenhouse gas emissions (GHGs) inventory, as analyzed in 2003, indicates that transportation contributes 50%, the residential sector 24%, the commercial sector 16%, agriculture 6% and waste 3%. The integration of environment, economy and social-equity will be used throughout the CWP in its policies, programs and goals.

The CWP contains three primary elements: natural systems and agriculture, the built environment, and the socioeconomic context. The natural systems element includes such topics as biological resources, water resources, environmental hazards, atmosphere and climate, open space, trails and agriculture/food. The Bayfront Conservation Zone is proposed in the east side of the county, with greenbelts and community separators included for the extended protection of prominent ridgelines. Agricultural zones will be expanded and there is an increase in organic food production in the county.

For the built environment, the CWP addresses community development, design, energy and green building, mineral resources, housing, transportation, noise and related issues. Key elements include promoting affordable employee housing units, focusing on mixed use commercial areas, placing housing and jobs near transit. The improvement of the Marinwood and Strawberry Shopping Centers toward a mixed-use scenario with improved pedestrian access is intended.

The socioeconomic element includes interactions of people in economy, childcare and the broader social field. Economic programs that are promoted include targeted businesses, especially those considered green and clean, and that give back to the community and implement socially responsible business practices. Diversity is assessed in terms of ethnic diversity, participation by minorities, public health analyses that link land use planning and public health and promotion of healthy lifestyles, and emergency services.

Programs under development include *Cities for Climate Protection Campaign*—which is now in the phase that develops an implementation plan to reduce carbon emissions; a *Million Solar Roofs Program*, and a *Green Business Program*. The County's Residential Energy Ordinance and Green Building Checklist require that any building larger than 3,500 square feet be limited to energy use for that amount of space, and beyond that the building must address the energy burden. Renewable energy on site must also be installed. In the Oakview Project, a rating of "certified" or better must be met under the Marin new Home Green Building Residential Design Guidelines. A solar site analysis can be conducted to assess potential energy generation capacity, and free technical assistance will be provided to anyone in the County seeking to install solar power in their home. The Oakview project will use solar power and integrate other green building elements. The Fireside building will be redeveloped into a mixed-use affordable housing unit integrating solar energy.

Participants in the Green Business & Sustainable Partners Programs must demonstrate how they will reduce energy and waste, and water consumption as well. Sustainable partner standards will direct manufacturing operations toward a closed loop system which takes the waste and returns it to the manufacturing stream. The success of these programs will be measured by indicators, targets and benchmarks. There are 70 proposed indicators that will be tracked at two year intervals. For example, the "energy mix" will be tracked with regard to both renewables and fossil fuels. In 1999, renewables constituted 15% of energy generation in the County, and the target is 20% for 2010 and 40% for 2017. If the County pursues a community choice aggregation and becomes a power purchaser for its constituents, it would acquire greater control over purchasing power from clean sources of energy. The County is presently looking into this course of action.

Another target is to reduce GHG emissions. In 1990, County government emissions were 16,000 tons of GHGs. County-wide 2.6 million tons were emitted. The goal is to reduce this by 15-20% by 2015 for internal government and by 15% for the entire County by 2015. The County has worked with a team of graduate school interns from UC Berkeley on these targets, and the study indicates that the County has met the target, due to compliance with regulations chiefly at the state and national level. The County hopes to be a leader in reducing GHGs, and to establish a paradigm which other counties can adopt.

The analysis by the UC Berkeley interns lead to the development of a list of six measures, based on loitial cost, high payback, and transferability from County to city. These include hybridizing fleet vehicles, electric vehicles for parking enforcement, efficient lighting retrofits, energy star equipment purchasing, landfill methane electric generation, and photovoltaic installation in municipal buildings. The generation of electricity from methane at the Redwood Landfill has 75 times the impact of the other measures. The landfill is presently in the process of obtaining a new operating permit, and discussions with the Air District on the permit are underway as there are several technological issues associated with methane capture and particulate matter that require evaluation.

The CWP's Environmental Impact Report (EIR) includes a review of a letter from the Attorney General to Orange County in March, 2006 criticizing the County for not including GHGs in an EIR for a transportation plan. Municipalites in California are beginning to take note of this letter. The EIR for Marin County is due soon. The modeling that will be conducted to evaluate these measures is based on population and vehicle miles traveled. The prospect of adding population density as a criterion is under discussion.

The CWP is estimated to reduce Marin County's ecological footprint to 400,000 global acres of footprint annually, if a 20% County wide decrease in electricity usage can be achieved by 2015. If a shift to renewable sources of energy of 40% can be achieved by 2015, then an additional 470,000 global acres of footprint will be reduced.

In discussion, Ms. Weisz noted that Sonoma County has a landfill that generates electrical power from methane capture, and Marin County would like to follow their lead. There was a great deal of community support in Sonoma County for this project, and that landfill supported the community direction. Mr. Hess noted that 15 years ago the Air District adopted a regulation that all gases generated at landfills must be collected, burned or abated. The US Environmental Protection Agency (EPA) following that action adopted a similar rule for landfills. The issue of converting landfills from the process of burning methane emissions to generating electricity is under discussion at this time. There are about 20 landfills in the Bay Area that could be candidates for generating electricity from methane gas burned in internal combustion engines. The total amount of electricity that could be generated is estimated at 20MW. This could power 20,000 homes, reduce GHGs and displace some power plant emissions. However, flaring methane emissions at landfills is less polluting than combusting such emissions in internal combustion engines. Staff is examining the potential impact of a 20% increase in NOx emissions from internal combustion engines (ICEs) under a methane capture scenario. The relationship between limiting NOx- or VOC-has an influence on this question, as NOx has a more important relationship to ozone generation in the Bay Area.

On another level, some of the constituents of methane gas—ranging from sulfur to extant compounds from silica—can be a problem for internal combustion engine contamination as well. District staff are working with the Ox Mountain Landfill for a demonstration program for methane gas clean-up and combustion in clean burning engines, as well as after-treatment processes. Cost benefit questions raised by the Redwood City Landfill regarding engine wear are also under discussion. Marin County could partner with the landfill staff at Ox Mountain to use their technology that extends the life of diesel engines. The cost-benefit issue concerns the break-even point in this waste management/air quality relationship.

Mr. Hess indicated that staff is preparing a White Paper on this entire matter, which addresses the various trade-offs that are perceived at the present time. This could be reviewed by the Committee at a future date. He added that a number of key agencies throughout the state met yesterday with District staff on this issue and that the discussion is pending in other regulatory contexts as well.

Ms. Weisz noted that more recently the CWP has emphasized GHGs, and its air and climate section has expanded its pollutant coverage beyond the more standard categories related to criteria pollutants and ambient air quality. The CWP looks at impacts on GHG emissions and cross-references other areas in the CWP in terms of public transit, bicycle usage, mixed-use housing, renewable energy sources, and fossil fuel use reduction. Other components examine climate change impact mitigation on the community in a broader sense, such as projected rise in sea level and where to plan for development near wetland areas. In that section of the CWP, storm surges and flood potential are specifically addressed.

In reply to a question on how the District might be helpful to other jurisdictions in this capacity, Ms. Weisz stated that the District could provide assistance in the air quality elements of other County general plans that may be revised in a similar manner. If the District is taking up climate change as an issue, this will spread the word to other entities. The air and climate section of the CWP might itself become a reference resource, and the District might consider the concepts in that section and make it broadly available to other jurisdictions. Marin County is a high consumer of resources but the impacts from the use of those resources do not have a major impact on the County. The County imports many products and exports considerable garbage, except for what goes to the Redwood Landfill. The County has no refineries, enjoys an ocean breeze, and has few air quality issues that stem from transportation. Mr. Hess added that many Marin County residents use Golden Gate Transit, clean vehicles, hybrid buses, and ferry boats. The County has also adopted a wood smoke ordinance. Dave Vintze, Air Quality Planning Manager, indicated that District staff is preparing draft air quality element guidelines for local jurisdictions to use, and will review what Marin County has done in terms of GHGs.

Chairperson Hayes directed the Committee to review the air and climate element in the plan, and he asked Mr. Vintze to share the draft, when it is ready for comment, with the Committee. Chairperson Hayes added that in terms of the Attorney General letter that was sent to Orange County, the Committee should consider where the GHG issue can be included in California Environmental Quality Act (CEQA) guidance as well. Mr. Vintze replied that staff is drafting new CEQA guidelines, although the identification of a significance criterion for these is unclear as well. This is important because recent court decisions require the agency to justify significant thresholds based on substantial evidence.

5. **Discussion of Committee Carbon Footprint.** Chairperson Hayes presented a draft document entitled "Carbon Footprint Analysis: BAAQMD Advisory Council Air Quality Planning Committee." It sets forth a framework, based on the World Resources Institute calculator, for evaluating the carbon footprint of the Committee, based on vehicle miles traveled to and from meetings, electricity needs in attending Committee and Council meetings, and air travel to the A&WMA conference. It is unclear how to identify the energy demand for the Board Room for this meeting, and staff can assist the Committee in determining this. In calculating the cost of offsetting carbon emissions, the current rate is $5.50 dollars per ton of CO2 equivalent. An initial estimate for the Committee members is $12.20 a year. Different websites provide calculators for this estimate. Mr. Kurucz noted he had performed this calculation on two different websites, and found that one had many default settings, while another was considerably more complex with specific fields to fill in. The Committee reached consensus that it wanted to perform this calculation for the Committee, and would contribute data on round trip mileage to and from Committee and Regular Council meetings. Mr. Hess indicated he would provide information on the energy usage for the Board and adjacent conference room.

6. **Committee Member Comments/Other Business.** Mr. Glueck stated that he spoke with a consulting firm that has developed an alternate approach to energy generation that uses hydraulic cylinders underneath road plates at bridges and elsewhere to produce electricity. The Committee agreed to consider this technology at a future meeting.

   Chairperson Hayes directed that at the next meeting the Committee would receive an update on the staff's development of guidance for local plans and CEQA, and also on the White Paper on methane capture at landfills.

   Dr. Holtzclaw stated he would present a paper at the A&WMA conference with recommendations on how to evaluate pedestrian and bicycle projects for eligibility and credit under the Carl Moyer program. Ms. Drennen expressed her interest in receiving a copy of the paper and to hear this presentation at a meeting of this Committee as well.

7. **Time and Place of Next Meeting**. 9:30 a.m., Wednesday, August 9, 2006, 939 Ellis Street, San Francisco, CA 94109.

8. **Adjournment.** 11:42 a.m.

James N. Corazza
Deputy Clerk of the Boards

AGENDA: 4

Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

DRAFT MINUTES

Advisory Council Technical Committee
1:00 p.m., Wednesday, June 14, 2006

1. **Call to Order – Roll Call.** Mr. Altshuler called the meeting to order at 1:17 a.m. Present: Sam Altshuler, P.E., Irvin Dawid, John Holtzclaw, Ph.D. Absent: Louise Bedsworth, Ph.D., Robert Bornstein, Ph.D., Chairperson, William Hanna, Stan Hayes.

2. **Public Comment Period.** There were no public comments.

3. **Approval of Minutes of April 12, 2006.** The approval of minutes was deferred to the next meeting due to the lack of a quorum.

4. **Ambient Particulate Matter (PM) and the Evolution of Concern to Ultrafine PM.** Technical Committee member Sam L. Altshuler, P.E., Senior Program Manager, Clean Air Transportation Group, Pacific Gas & Electric, San Francisco, California, stated he would review key information presented at a recent conference on Ultrafine PM held at the South Coast Air Quality Management District.

   Mr. Altshuler reviewed the history of PM measurements from the 1950's with the British Smoke measurements to the early category of "Total Suspended Particulates" (TSP) at the level of 50 microns. In the mid-1980's, PM_{10} was the new fraction of measurement, followed in the 1990's by $PM_{2.5}$. At the present time, the nanoparticle (nPM) of 1-100 nanometers is getting attention.

   The size fraction of measurement has evolved in parallel with the ability to measure smaller fractions of PM. Motivations to assess the impacts of fine PM are due to the greater visibility impairment in blockage of light, the soiling of materials and monuments, and health impacts related to diesel PM, both in terms of chronic effects (cancer, silicosis) and acute effects (asthma and pulmonary symptoms).

   Measurement techniques have also evolved over time from 8"x10" filters, impactors with size separation, coefficient of haze, Tapered Element Oscillating Microbalance (TEOM) and beta gauges, particle number counters, Scanning Electron Microscopy(SEM)-(E-Ray Floures-cence)XRF for size and chemistry, and real time sulfate and nitrate monitors.

   PM sizes from the primary sources include TSP—wind blown dust, combustion ash and soot; PM_{10}—chiefly sea salt, dust, combustion soot; $PM_{2.5}$—combustion soot, and atmospherically formed NO_3 and SO_4; and $PM_{0.1}$ and nPM—combustion soot, aerosols (condensed oils and fuels), and atmospherically formed NO_3 and SO_4.

At the South Coast conference, David Kettleson presented a slide showing the interaction between particle count and size of a number of different types of PM from typical engine exhaust, in terms of distribution by mass, number and surface area showing varying health impacts.

Health issues associated with PM have also evolved over time. Many early air pollution studies were conducted as chamber exposure studies. In the 1990's, many epidemiological studies were published. These examined population', morbidity and mortality, and found correlations that linked to PM exposure. However, causality was never established. Other studies argued at that time that extremes of heat and cold could be correlated with similar health effects.

A slide presented at the conference by Dr. John R. Froines addressed the potential pulmonary effects of PM. It showed mitochondria at extreme magnification and revealed how PM is lodged within the interior of the lung cells. Dr. Froines hypothesized that PM causes cardio-respiratory effects because it induces oxidative stress.

Mr. Altshuler added that Dr. Robert Sawyer, Chairperson of the California Air Resources Board (CARB), also gave a noon time presentation at this conference summarizing many aspects being discussed at the conference. He observed that there are health-related findings that ultrafine particles cause greater inflammatory response and greater cellular damage than fine PM. Even though they have less mass than fine PM, ultrafine particles have large surface areas and occur in great numbers. They contain toxic components that can initiate harmful oxidant injury in the lung and have high deposition rates in the lung. They can also access the circulatory system and move from the lungs to other organs.

Dr. Sawyer spoke on the health effects as a function of particle size, with ultrafine PM being the most serious in comparison with coarse and fine PM. With respect to the source distribution of PM, Dr. Sawyer opined that ultrafine PM comes primarily from vehicle exhaust and fuel use. Concentrations of ultrafine PM along freeways with heavy gasoline or heavy diesel traffic are similar. Mr. Altshuler observed that diesel PM is primarily related to the chronic 70-year cancer potential, while the smaller particles are associated with causing more acute symptoms. This has generated some interesting discussion in strategies for mitigating vehicular emissions.

Mr. Altshuler showed a chart that set forth the source contributions to primary ultrafine particle emissions in the South Coast air basin in 1996. Ultrafine particles were found to originate almost exclusively from combustion sources. Another chart assessing the annual average PM_{10} source contribution in the San Joaquin Valley for large particulates indicated that over one-half derived from fugitive dust, 27% directly from mobile sources, 11% from burning and cooking, 5% from ammonium sulfate, and 4% directly from mobile sources, 11% from wood burning and meat cooking, and 27% from secondary formation from ammonium nitrate.

Taking these data into account, Mr. Altshuler stated he had tabulated the health effects associated with fugitive dust, ammonium nitrate, ammonium sulfate, burning/cooking, and direct mobile sources. The preliminary calculations indicated that the highest risk factor was found in direct mobile sources for both chronic and acute symptoms. At the conference, however, there was no discussion of the possible health effects of ammonium nitrate, and to date no literature on this subject has been published. Wood burning and cooking also showed higher risk factors for acute and chronic pulmonary symptoms.

Mr. Altshuler stated that, at the conference, Charles Stanier presented a chart on how ultrafine PM is formed in the atmosphere throughout the day and found that it greatly resembles the ozone formation plot. A second slide by Stanier showed the formation of ultrafine PM on a cloudy and sunny day in Pittsburgh on November 10 and 11, 2001. The plot also paralleled the plot for ozone formation.

Mr. Altshuler concluded that adverse health effects of PM are determined by the concentration of PM, the potency/unit risk factor of the chemical constituents contained therein, and then the size and number of the particles. He added that controls are separately needed for nPM as well as ultrafine PM in order to complement the reductions in diesel PM. Such controls ought to consider lube oil regulations and its formulation for internal combustion engines.

While no health impacts have been reported to date for PM nitrate, the San Joaquin Valley plans to reduce PM nitrate to attain the $PM_{2.5}$ standard. However, health impacts from nitrogen dioxide (NO_2) are being reported at increasingly lower levels. This should be closely followed along with the evolution of a lower NO_2 standard by CARB.

Mr. Altshuler added that the following anecdotal conclusions are fairly well-known:

- Diesel smoke is linked to chronic health effects (cancer).
- Ultrafine particulates are linked to acute and chronic cardiopulmonary health effects (heart attacks, asthma, etc.).
- Diesel soot seems to adsorb ultrafine PM aerosols.
- Reducing diesel smoke with a diesel PM increases exposure to ultrafine (a tradeoff between cancer and cardiopulmonary health effects) as well as increased NO_2.
- Other lube oil using IC engines can emit ultrafine PM similar to diesel.
- nPM falls off rapidly within 300 meters of a freeway but grows into larger particles as they move away from the freeway.
- Exposure to PM when your respiratory system is compromised exasperates the situation: extreme heat or old does the same.
- The question of second hand cigarette smoke may be related ultrafine PM.
- Meat should be salted after, and not before, it is grilled to reduce dioxin exposure.

Mr. Altshuler stated that ultrafine PM will become an increasingly important issue in the regulation of PM. Mr. Hess added that this will be addressed at the forthcoming Air & Waste Management Association conference.

5. **Committee Member Comments/Other Business.** Mr. Dawid stated that in recent news articles, a trend toward an increase in diesel fuel vehicles in the fleet has been identified, and this raises serious air quality questions. Mr. Altshuler replied that this also raises issues of greenhouse gas emissions (GHGs), exhaust standards and other regulatory categories. The Council must assess whether or not it has a role to play in assessing the issue of increasing diesel fuel vehicles in the overall vehicle fleet. This could initially be discussed at the Committee level in the future.

6. **Time and Place of Next Meeting**. 1:00 p.m., Wednesday, August 9, 2006, 939 Ellis Street, San Francisco, California 94109.

7. **Adjournment.** 2:25 p.m.

James N. Corazza
Deputy Clerk of the Boards