

TRI-TAC AIR COMMITTEE
JUNE 1, 2007
ISSUE SUMMARY

1. The Global Warming Solutions Act of 2006 (AB32)

The California Global Warming Solutions Act of 2006 (AB 32) became effective on January 1, 2007. This Act commits California to reducing the state-wide aggregate greenhouse gas (GHG) emissions to 1990 levels by 2020. The Act will regulate public and private entities that produce GHGs (defined as carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). In order to meet the target state-wide aggregate emission limit by 2020, AB32 contains specific deadlines that CARB must meet during the rule-making process. CARB has already developed a list of early discrete actions that can be taken to reduce GHG emissions. CARB must develop mandatory GHG emission reporting and verification requirements for GHG emitters and set a 2020 state-wide aggregate GHG emission target by January 2008. By 2009, CARB will prepare and approve a Scoping Plan for achieving the 2020 state-wide aggregate emissions target. By 2011, CARB must adopt reduction measures and emission limits for GHG emitters. In addition, CARB may implement market-based "cap-and-trade" regulations beginning in 2012. For more information on CARB's actions related to AB 32 go to: <http://www.arb.ca.gov/cc/cc.htm>

Update: Based on recent workshops conducted by CARB, the main industries/sectors that will be required to report emissions beginning with 2008 emissions will be those that contribute the majority of state-wide CO₂ emissions (94% of point source CO₂ emission). These sectors include power plants and utilities (≥ 1 MW), oil refineries, cement plants, and large stationary combustion sources.

POTWs from the Southern California Alliance of POTWs (SCAP), the Bay Area Clean Water Agencies (BACWA), and the Central Valley Clean Water Agencies (CVCWA) have recently formed the **California Wastewater Climate Change Group (CWCCG)** in response to AB32. Currently there are 37 agencies committed to this group. 12 agencies are Tier 1 members (with voting rights). These agencies make up the CWCCG Steering Committee. The remaining 25 agencies are Tier 2 members (without voting rights). The goals of the group are to: (a) work with agencies to develop wastewater specific emissions protocols for wastewater treatment plant (WWTP) processes; (b) develop priorities and implementation plans to respond to reporting and emissions reduction requirements that CARB will develop for the WWTP industry; (c) develop strategies to address other utilities and sectors connected to the WWTP industry (e.g., water treatment, collection systems, biosolids, septic tanks, etc.); and (d) position the WWTP industry for carbon trading. In the coming year, the CWCCG is focusing on the development of emissions protocols for WWTP processes and will work with

both CARB and the California Climate Action Registry to have these protocols adopted. CWCCG has contracted with CH2M HILL to complete this work.

Contact: Stephanie Cheng, CH2M HILL

2. CARB Diesel Airborne Toxic Control Measures (ATCMs)

CARB has adopted and is continuing to develop ATCMs for diesel engines that have large impacts on POTWs, as they have the potential to force retrofits of existing diesel engines. CARB previously adopted particulate matter (PM) emissions standards for Stationary Diesel Engines and Portable Diesel Engines applicable to engines rated at 50 hp or larger. The Stationary ATCM requirements for emergency standby engines include tiered emissions standards based on the hours of operation for maintenance and testing. Engines operating more than 20hrs/yr must be retrofitted with Best Available Control Technology (BACT) to meet specific emission standards. The requirements in the Portable ATCM for engine turnover or BACT are based on fleet average emissions that decrease over time.

CARB has also previously adopted a diesel control measure for on-road heavy-duty diesel-fueled fleets, also known as the Fleet Rule. This regulation affects all on-road vehicles with gross vehicle weight ratings of greater than 14,000 lbs owned or operated by a public agency or private utility. The ATCM requires phasing-in of BACT for these vehicles between 2006 and 2011 based on engine model year.

Update: CARB recently adopted the Portable ATCM and the Portable Equipment Registration Program (PERP). Beginning January 1, 2006 the PERP program only allowed engines to register that met current non-road emission standards. However, in September 2006, CARB heard public testimony concerning the inability to register older engines under PERP. In response, CARB issued emergency amendments to PERP and the Portable ATCM that allowed permitting of resident Tier 1 and 2 engines by CARB or local districts, the permitting of Tier 0 engines by local districts and compliance flexibility provisions for affected industry. These emergency amendments were made permanent April 27, 2007. Updates on CARB's Stationary and Portable ATCMs are available at: <http://www.arb.ca.gov/diesel/statport.htm>

CARB also recently adopted changes to AB 2588 in November 2006 (currently pending Office of Administrative Law [OAL] approval). The primary purpose of the changes was to streamline the requirements of AB 2588 with those of the Stationary ATCM. Tri-TAC submitted comments to CARB requesting that the proposed language be clarified to (1) exclude construction projects from the definition of "routine and predictable" so that emissions from construction projects would not be included in the Hot Spots program; (2) limit the ability of local air districts to determine if a portable engine should be considered stationary for purposes of the Hot Spots program; (3) allow

facilities to proactively conduct health risk assessments (HRA) without receiving a request from a local district. CARB addressed comment 2) by limiting the definition of a stationary engine to an engine that is “designed to stay in one location, or remains in one location and by postponing applicability to portable engines until 2010. CARB also addressed comment (3) by adding specific language allowing a facility to submit an updated HRA to a local district to prove that a facility is not a significant risk. For more information in AB 2588: <http://www.arb.ca.gov/ab2588/ab2588.htm>

CARB is also currently working on an ATCM for in-use off-road diesel mobile equipment greater than 25 hp. This control measure will affect construction equipment, mining equipment, airport ground support equipment, and industrial equipment such as forklifts. CARB proposes to regulate PM and NOx emissions through engine turnover and BACT. Retrofit and turnover requirements will be based on fleet average emission rates that decline over time. Regulations for large fleets (>5,000 hp) will go into affect in 2010, and for medium fleet (1,500 to 5,000 hp) in 2013. Small fleets (<1,500 hp) will not be regulated until 2015. Vehicles that are operated less than 100 hours per year will be considered “low-use” and will not count toward a fleet’s emissions. The Board considered public testimony on May 25, 2007 and will make a final determination on the proposed ATCM at its July 26, 2007 meeting. Many of the public comments at the May meeting were related to discrepancies in the projected cost of the proposed rule. More info is available at: www.arb.ca.gov/msprog/ordiesel/ordiesel.htm.

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3. Distributed Generation Review

CARB recently adopted amendments to the Distributed Generation (DG) Certification Regulation in October 2006. The amendments are aimed at manufacturers of DG technologies and include a certification method for small DG equipment (micro-turbines and fuel cells), which will serve in lieu of obtaining a permit from the local air district. Larger DG equipment will still require a permit to operate from the district. This rule does not apply to in-use DG equipment.

The amendments will add requirements to enable technologies fueled with waste gas (landfill, digester, and oil-field waste gases) to be certified. Manufacturers will be required to certify their equipment using the surrogate waste gas compositions defined in the regulation (i.e., digester gas – 60% to 65% CH₄ and 35% to 40% CO₂) and will need to meet increasingly stringent waste gas emission standards for NOx, CO, and volatile organic carbons (VOCs) in 2008 and 2013.

Update: Amendments were adopted by CARB on October 19, 2006 and are currently pending submission to and approval by the OAL. For additional information on the DG Certification Regulation go to: www.arb.ca.gov/energy/dg/dg.htm.

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4. Water Environmental Research Foundation (WERF) Collection System Odor and Corrosion Study

CH2M HILL and King County (Washington State) are co-principal investigators for a WERF project focusing on minimization of odors and corrosion in wastewater collection systems. The project will transfer state-of-the-art technology and information from a literature survey and recent field experiences to collection system owners, designers, and operators on odor and corrosion assessment, measurement, characterization, monitoring, and prevention. The project plan includes a five-step approach:

- (1) Assembling published and unpublished information in a database of prior research, literature, and gray material utility studies.
- (2) Evaluating the database for quality, accuracy, and completeness and identifying potential knowledge gap areas where follow-up research or field studies are needed.
- (3) Classifying items in the database for information searching purposes and use by collection system owners and designers.
- (4) Preparing design and operational guidance from the available information. An initial "Plain English" summary guidance manual will be developed as part of Phase 1. This summary manual will highlight available knowledge on collection system odor and corrosion technologies.
- (5) Developing a collection system assessment tool in Phase 2 and 3 to assist agencies in evaluating their collection system odor and corrosion issues.

Update: Phase 1 of the project is complete. The literature search effort included information-sharing partnerships with municipal utilities, the academic community, and the profession, all on a global basis. The literature search was conducted using existing databases and articles were collected, logged, and reviewed. A solicitation for utility gray literature was also distributed and that literature was logged and reviewed. The Phase 1 report, entitled "Minimization of Odors and Corrosion in Collection Systems" was recently completed and distributed to WERF in May 2007. The introduction of the report is a "plain-English guide providing a useful and easily understandable overview of odor and corrosion in collection systems, including how odor and corrosion compounds are formed and what to do to control them". The report

also summarizes the state of the art in knowledge related to odor and corrosion in collection systems and highlights the latest knowledge reported in literature.

A gap analysis and ranking was conducted to develop a research agenda for the next phases of work. Research on the topics agreed to by WERF and the Project Steering Committee will begin this year. The four highest ranked research items among the project team were as follows:

- (1) Better understanding of collection system air movement and natural ventilation.
- (2) Better understanding of the relationship of gas phase H₂S to concrete corrosion rates in collection systems.
- (3) Better definition of the non-H₂S related odor compounds.
- (4) Better understanding of the treatment effectiveness of various gas and liquid phase treatment technologies for these non-H₂S related odor compounds.

The Water Environment Federation (WEF) and WERF will hold a one-day workshop on Sunday, October 14th, at WEFTEC.07 in San Diego, CA. The agenda will cover information, theory, and current research activities related to odors and corrosion in collection systems. The objective of the workshop is to give participants a chance to meet WERF researchers that have practical experiences in addressing collection system odor and corrosion issues and to ask questions on topics that are important to them. Issues that are still evolving and targets of future research activities will be discussed.

Contact: Jay Witherspoon, CH2M HILL

5. WERF Odor Control Technologies Assessment

Los Angeles County Sanitation Districts (LACSD) and CH2M HILL received a Water Environment Research Foundation (WERF) Odor Assessment grant for a multi-phase research program. The primary purposes of this study are to provide a working definition of odors, determine POTW odor sources, list known odor compounds of concern, provide odor assessment approaches, provide modeling techniques for odor emissions estimating and odor dispersion, and conduct field research on the most important odor issues.

The first phase was primarily a literature search that was used to develop a field research agenda for the second phase studies. This phase also looked at what has been successfully used at industrial and agricultural sites to control odors and whether

there is any application to POTWs. In the second phase of the study, the WERF team assessed potential origins of odors from biosolids processes following stabilization by anaerobic digestion. The research aimed at determining the means of odor generation in various dewatering, storage, and conveyance processes.

The overall purpose of the Phase 3 research is to identify the most optimal means of reducing odors in anaerobically digested and dewatered biosolids, thereby reducing negatively perceived impacts on the environment or public when the biosolids are beneficially used on land. Results will ideally present a roadmap for wastewater treatment plant operators for optimization of biosolids processing in order to reduce biosolids cake odors. This third phase incorporates the theories and strongest correlations formed in the Phase 2 work, and includes both laboratory (bench-scale) studies and manipulation of plant parameters at full scale.

As part of Phase 3, laboratory studies at Bucknell and Virginia Tech have been completed assessing the following variables on odor production within the solids processing train: (1) the role of metal cations (primarily iron and aluminum), (2) the effects of digester solids retention time (SRT), and (3) the effects of dewatering process control parameters. Biosolids samples were collected at facilities throughout North America to produce data points for this study. Laboratory studies were also completed investigating the effect of enhanced digestion processes on odor production of the dewatered cake.

In addition, the WERF team has completed pilot studies at the Los Angeles County Sanitation District (LACSD) Joint Water Pollution Control Plant and Philadelphia Southwest Water Treatment Plant. At these facilities, side-by-side comparisons of dewatering facilities have been run, testing odor production of various means of chemical dewatering. Also at pilot scale, the WERF team analyzed the effect of chemical injection of ferric chloride and lime prior to dewatering.

Conclusions based on testing are as follows:

- Odors from anaerobically-digested, non-limed biosolids correlate almost perfectly to the total concentrations of volatile organic sulfur compounds (VOSCs) in the cake.
- Increasing the storage time in a controlled facility at the generation site can significantly reduce odor levels in the cake.
- The addition of aluminum and iron play a role in reducing biosolids cake odors. Aluminum addition, in particular, appeared to show the greatest potential as a treatment option.
- Longer digestion times will result in better odor reduction, up to a digestion time of about 30 days.
- Dewatering processes using higher shear forces that produce dryer cake solids, such as high solids centrifuges, result in higher levels of cake odor than processes with lower shear such as belt presses or rotary screw presses.

Update: A final report documenting the results of Phase 3 has been submitted to WERF and will be issued at WEFTEC.07. The report includes a roadmap of suggestions and alternatives to reduce biosolids cake odor and addresses a combination of operational changes, equipment modifications, and chemical addition.

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